

RAILROAD GAZETTE

SATURDAY, MAY 17, 1873.

Machine for Testing the Value of Lubricants.

We give herewith an engraving of a machine for testing the value of lubricants by determining their power of reducing friction, resisting pressure, sustaining high temperatures, and cooling heated journals. The machine was invented by Professor R. H. Thurston, of the Stevens Institute of Technology, Hoboken, N. J., and the particular form shown in the illustration was designed by Mr. J. A. Henderson, a student in that institution.

The machine is intended to give the coefficient of friction, pressure on bearing, and temperature of journal boxes at any time, and the readings are proposed to be taken at short intervals throughout the test.

The machine consists of a shaft, *A*, running in two bearings, *B B*, and driven by a pulley, *C*. The shaft is supported by a standard, *D D*, carried on the base, *E E*. At the outer end of the shaft is a journal, *F*, of either steel or selected iron; suspended from this journal, and clamping it by means of boxes, *G G*, is an arm, *H H*, carrying an adjustable weight, *I*, which may be changed for one of different size, or adjusted on the arm, as is found requisite.

The pressure under which the oil is to be tested is obtained by setting up the boxes, *G G*, by means of the screw *K* acting on the nut *L*, on which nut the spring *J* rests. The pressure per square inch is read off from the scale *N N*, which is traversed by an index, *M*, attached to the spring *J*.

The friction causes the arm *H H* to swing out from the vertical position, the moment of friction being indicated by the index on the arm *O*, which traverses the graduated arc *P P*. The coefficient of friction is obtained by dividing the reading on the scale out on the arc *P P* by a second set of empirical divisors laid off on the scale *N N*. The temperature is indicated at all times by a thermometer, *Q Q*, set in the upper brass.

In using the machine, a small and determined quantity of the oil to be tested is placed on the journal *F*, and the pressure being adjusted by the screw *K* to that at which the oil is desired to run under test, the machine is started at a speed which will give the desired relative velocity of rubbing surfaces. Observations are made at short intervals, and recorded, until the test is closed by rapid heating, as shown by the thermometer, and excessive increase of friction, as indicated by the arm *H H*, swinging up against its chocks. Competing oils are similarly tried, and the records afford a perfect means of comparison.

Thus, sewing-machine builders desire oil of long endurance and small frictional resistance and viscosity; on locomotives an oil that will bear high pressure for the greatest length of time without heating is the most desirable, even although not as limpid and of as slight frictional resistance. The relative power of resisting high temperatures without decomposition is another important point which may be tested.

Any lubricant may be tested whether mineral, vegetable or animal oil, tallow or mixture like axle grease.

The only precautions necessary are not to allow the temperature to run so high as to injure the the thermometer or the journal surface, and to measure accurately the quantity of oil used.

The form shown in the cut is that proposed for general use, but for extremely heavy pressures another form has been designed in which the pressure on the journal is obtained by a clamp composed of a fixed arm and a spring, the spring being set up by a hand wheel turning a nut in the end of the fixed arm. In this form of the machine, the moment of friction is measured by the compression of the spring. The essential feature of both forms is the combination in one machine of apparatus for making simultaneous dynamometrical and thermometrical tests of the lubricant.

The machine is patented by Professor Thurston, but the patentee announces that master mechanics can obtain permission to construct and use it on application to him. He will also furnish applicants with the necessary dimensions for the machine and with the numbers to be attached to them.

Difficulty of Managing a Great Railroad.

The Nation of last week, in an article entitled, "Transportation and the Tariff," has the following on the Western farmers' movement for cheap transportation and the qualities needed and often secured for the management of railroads:

It is greatly to be hoped that the Western farmers, who are now so much roused against the railroad corporations, and are making such a formidable show of "Granges," will come to some conclusion before long as to what they want, and put it down on paper in a practical shape; otherwise the movement will die out like the Know-Nothing movement, some phases of which it already resembles, leaving the corporations stronger and more tyrannical than ever. Thus far, nothing in the shape of a policy worthy the attention of intelligent men has been produced. What the farmers' grievances are we all know; now let us have the remedy in black and white, and in a form which will bear expression in legislation. It is hardly worthy of sensible business men, such as the great body of the Western

farmers are, to go on pouring forth vague declamation against "heartless monopolists," like the complaints of a meeting of a trades union or of a woman's-rights convention. Nor is the plan of having "reasonable rates" of freight—or, in other words, the cost of transportation—fixed by a jury or a commission, which has been adopted in Illinois, very creditable to the intelligence of men who like to sell their wheat and cattle at the market rate. We have had enough in all conscience, during the last fifteen years, of attempts to set things to rights by the aid of medieval expedients. It is time that we once more began to go forward again, and tried to profit by the experience of past ages instead of copying it.

The farmers' uprising, undoubtedly, whether it be well or ill managed—whether it grow in its present shape into a real political organization, with a policy and platform, or pass through a cloud of rhetoric into something new—is, as we ventured to predict a fortnight ago, "one of the early skirmishes of the impending war, which, unless we greatly err, is destined to produce industrial, social, and, above all, political changes in this country of the most startling description." It is important enough already to make the discussion now raging in some of our Eastern papers, as to what the Republican party or the Democratic party ought to do next, seem almost puerile. But the new movement will not become a real political force until it is based on a calm and rational view of the facts of the situation. First and foremost among these is the difficulty of successfully managing a great railroad. This does not seem, perhaps, very formidable to an excited orator at an anti-monopoly meeting, but it is nevertheless, in the eyes of a rational man, one of the most difficult feats of modern civilization. It is indeed so difficult that the supply of persons equal to the task is, in this or any other country, very small. Cheap transportation might doubtless be obtained by the States at once by an amendment to the Constitution which would enable them to seize on all the railroads, and compel the managers to work them at low rates. But cheap and safe transport—if, indeed, there is any cheap transportation which is not also safe—cannot be permanently secured by either the Government or corporations without good management. Now, what does the good management of a railroad mean? It means, in the first place, the selection of a small army of employees, for a great variety of duties, requiring the utmost honesty, fidelity, exactness and

taken by the State itself; or, in other words, by the dozen cunning-looking gentlemen who meet in seedy black cloths in hotel parlors a few weeks before election, and call themselves "The People." We presume there are but few persons still enthusiastic enough to believe that these persons or their agents, however they might succeed with one road in each State, such as Mr. C. F. Adams, Jr., proposes they should carry on, would be capable of taking charge of the entire railroad system of the United States. Let those who are dissatisfied with Scott's or Vanderbilt's railroad service, think of what Tom Murphy's would be. In short, whatever the defect or inconvenience of our present system of having our transportation done by private enterprise, there is no substitute for it possible. A very large proportion of the talent of the country is now engaged in it, and we cannot afford to drive it away by undue State interference. In other words, the State could not provide as cheap and safe carriage as we now have by any process within its reach, or likely to be within its reach, and the extension of State activity would, in the present and probable condition of our politics, be simply an increase of the material out of which our Murphys, Ames, Caseys and Butlers are made.

The Union Pacific and the Free-Pass System.

A reporter of the New York Tribune recently had a conversation with Mr. Horace F. Clark, President of the Union Pacific Railroad Company, with reference to the experience of that company in receiving applications for free passes, its former practice in granting them, and its present practice of refusing them. Parts of this conversation are extremely interesting. We quote:

Reporter—What induced the company to take this firm stand at this time?

Mr. Clark—Well, the truth is, the abuse had become so monstrous that it was bound to come to an end. The recent action of Congress, in directing the Secretary of the Treasury to withhold payment of all compensation for Government transportation and the mail service, caused a serious deficiency of revenue. The payment of the passenger fares is absolutely necessary to provide the money to pay the expenses of running the passenger trains. The passenger service on this road can be maintained only by means of the passenger fares. We therefore determined on the thorough abrogation of the free-pass system as one measure of economy, and the giving away of our fares has ceased, "without respect to age, sex or previous condition of servitude."

Reporter—Are you not apprehensive that you will encounter difficulties from the Government or Congress by unfriendly legislation if you persist in the refusal to give the passes to official persons?

Mr. Clark—Well I do not know exactly what the extent of the danger is. We have been told that it would ruin the company to refuse to issue free passes, but we know that to continue to issue them as heretofore would be certain ruin. We had to choose, therefore, between possible and inevitable destruction, and we chose the former. All the excuse we have to give is that it was left to us to determine either to discontinue the running of the passenger trains, or to continue to run them and require the payment of the passenger fares. We decided that it was best, in the interest of the Government, the people and the company, to continue the passenger train service, and to exact the payment of passenger fares, and take the consequences all around.

Reporter—Do you think that the Union Pacific Railroad Company would have ventured to abrogate the free-pass system but for the deficiency of revenue resulting from the withholding of the Government money?

Mr. Clark—I rather doubt whether it would.

Reporter—Why?

Mr. Clark—I am afraid we should not have had nerve enough and sense enough to have done it.

Reporter—What is the effect upon the general railroad interests of the country of the free-pass system now prevalent throughout the United States?

Mr. Clark—Most melancholy and destructive. It seriously impairs their revenues, renders the passenger service of very many railroads unremunerative, demoralizes the employees, cheats the stockholders, embarrasses the action of public men who come within the range of its influence, disgraces that portion of the people who pay their fares, and inflicts numberless injuries upon railroad properties, without one particle of compensating benefit.

Reporter—In what manner does it demoralize the employees?

Mr. Clark—When they find the executive officers of a corporation making free with the gifts of its property, they become tempted to indulge in the luxury themselves. To give of one's own means is sometimes pleasant. The giving away of other people's property is by some regarded as delightful. The passenger fares of a railroad corporation are as much its property as the money in the treasury.

Reporter—Will this free-pass system be likely to continue on other railroads, or will it be by be abolished upon them?

Mr. Clark—I really do not know. Railroads are frequently managed by men who have no substantial interest in the property. By means of giving away free passes they can practice liberality at the expense of other people. They can popularize themselves without cost to themselves, for the resulting loss falls upon stockholders and bondholders. Cicero mentions that Cataline was as profuse of the property of other people as he was mean and niggardly of his own. Some of our railroad managers are endowed with that one of Cataline's virtues. The competition of competing freight lines tends largely to the maintenance of the free-pass system. There are very many difficulties in the way of its abrogation. In this case of the Union Pacific Railroad there was no middle ground, because of the condition of the road and its traffic, between making the road free and exacting from all the payment of the passenger fares.

To permit the great numbers whom business or pleasure takes from ocean to ocean to pass free because of their dignity, influence or wealth, and to impose the burden of its passenger service upon the poor and humble settlers along the line, who are all compelled to pay their fares, was most unwise and unjust discrimination. It ought to be reversed. It is equally wrong to place upon the freight transportation the burden of a non-supporting passenger service. The abrogation of free passes and the merciless exacting of the passenger fares will permit the gradual reduction of the rates of freight.

Reporter—Is this free-pass system common in Europe?

Mr. Clark—I think not. I am told that there is wholly unknown. This form of mendacity is peculiar to America. It is the pest and peril of our railroad system. It cannot well be

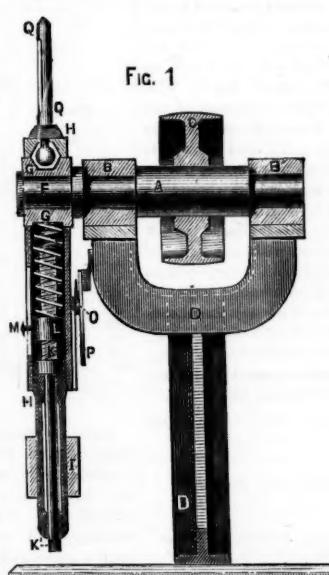
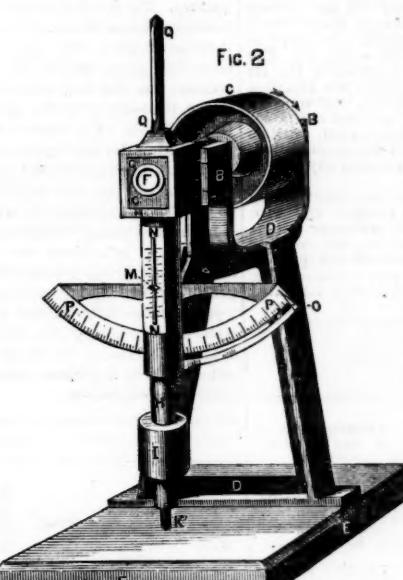


FIG. 1



MACHINE FOR TESTING THE VALUE OF LUBRICANTS.

abolished upon our railroads except by the concerted action of the managers of the great competing lines. No single line would venture alone upon the experiment of abrogating it. The Union Pacific Railroad is as yet without a competitor to the West Coast, and can, therefore, the more safely try the experiment. When the Northern Pacific and the Texas Pacific railroads shall have been constructed, it may be that the Union Pacific will return to the more generous methods of former days and give away its passenger fares; but of one thing you may rest assured, and that is, that any line of railroad to California that undertakes to maintain passenger service on the free-pass system will inevitably come to bankruptcy.

Trial of Smith's Vacuum Brake.

The following account of a trial of this brake we copy from the *National Car-BUILDER* for May:

A series of interesting and satisfactory trials of this brake were made on the 18th ultimo, on the Newark Branch of the Central Railroad of New Jersey, in the vicinity of Elizabeth. The trials were witnessed by a number of practical railway mechanics, most of whom were car-builders, who had come to the city to attend the regular monthly meeting at the rooms of the association on the previous evening, and who had been invited by Colonel Ricker, the Superintendent of the road, to accompany the train with which the trials were made. The party consisted of Messrs. A. Steinbach, of the Philadelphia & Reading Railroad; F. D. Adams, of the Boston & Albany; Joseph Jones, of the New York Central & Hudson River; R. S. Ramsey, of the Pennsylvania Railroad; C. M. Bissell, I. C. Buckhout, L. Garey and W. M. Strong, of the New York & Harlem; E. A. Olmstead, of the United States Rolling-Stock Company; J. E. Wiggins, of the New Jersey Midland; M. C. Andrews, late of the New York & New Haven; G. W. Morris, of the Culver Spring Company, Pittsburgh; J. Franklin, of the Grand Central Depot, New York; R. E. Ricker, George Hackett and T. W. Peebles, of the Central Railroad of New Jersey; Willis Davis, of the Empire Transportation Company; John Y. Smith, the inventor and patentee of the brake, and several others.

The brake is controlled entirely by the engineer, and consists of flexible air chambers, in cylinder form, with light iron heads placed under each car and connected directly with the present system of hand-brake rods and levers. These air chambers are connected with each other and with the locomotive by light iron pipes and flexible hose, fitted with air-tight couplings. The brake is operated by an air-ejector, which exhausts the air from the cylinders, causing their heads, to which are attached the brake connecting-rods, to be drawn together, thus applying the brake shoes to the wheels. The ejector is placed in the locomotive cab, is a simple and durable instrument, with no valves, pistons, packing or springs, requires no special attention or adjustment, and may be readily attached to any style of engine.

The track upon which the trials were made has been recently constructed, is in good condition, perfectly straight and with low grades. The train consisted of a 35-ton passenger engine and tender and six ordinary 19-ton passenger cars—weather fair and wind with train. The track was staked off with quarter-mile posts, and the rate of speed taken by stop-watches. The result of the several trials is given in the following tabulated statement:

Trials.	Speed. Miles per hour.	Distance. Feet.	Stops. Time, Seconds.	Feet per Second.	
1	35	520	16	32.8	
2	30	475	16	32.9	Desc'd grade 16 feet per mile.
3	30	550	17	32.6	
4	30	520	16	32.8	
5	35	610	19	32.2	
6	33 $\frac{1}{2}$	5,550	—	—	Asc't 5ft.pr.mile. Free running. Stopped&backed in 21 seconds.
7	33 $\frac{1}{2}$	550	16	34.6	
8	36	597	17	35.2	
9	30	580	18	32.8	Engine working ahead, wide op'n
10	30	505	16	31.9	
11	40	64 $\frac{1}{2}$	18 $\frac{1}{2}$	34.11	
12	33 $\frac{1}{2}$	535	16 $\frac{1}{2}$	32.4	
13	36	530	18	32.8	
14	45	700	18 $\frac{1}{2}$	37.8	

The seventh trial was made with a torpedo placed upon the track at a point unknown to the engineer, as a signal for applying the brake, the result eliciting the most unqualified expressions of approval from all present. Each of the trials was highly satisfactory, and every inquiry respecting details and special points was readily answered by Mr. Smith, who fully explained the working of the brake and every peculiarity in its construction. At the termination of the trials, the party returned to the city, and proceeded to the rooms of the Association, where the views of the company were embodied in the following preamble and resolution, which were unanimously adopted:

"Whereas, By the invitation of Colonel Ricker, Superintendent and Manager of the Central Railroad of New Jersey, we, as a party of practical railroad mechanics, have this day witnessed a series of trial tests of the capacity of Smith's vacuum brake, on a train of passenger cars, equipped with the same, on said road, therefore

"Resolved, That we are equally surprised and gratified at the results of the several trials of this brake, showing the ease, reliability, and effectiveness of its action in the quick stoppage of trains at various rates of speed, and under circumstances as various as any trial-tests will admit; and that we herewith tender our cordial thanks to Colonel Ricker for the opportunity afforded us for its inspection; and to Mr. Smith the expression of our unqualified approval of his brake and our confidence in its capacity."

We also add the following trials made on the 17th April, during a heavy rain and brisk wind. Train same as above. J. C. Mulford, engineer of both trains:

Trials.	Speed. Miles per hour.	Stops. Time, seconds.	Distance. Feet.
1	35	12	525
2	35	14 $\frac{1}{2}$	500
3	30	16	515
4	35	14 $\frac{1}{2}$	455
5	25	20	320
6	20	19 $\frac{1}{2}$	280
7	30	15 $\frac{1}{2}$	500
8	35	24 $\frac{1}{2}$	455

No. 5. Stopped and backed in 20 seconds.
No. 6. Engine working ahead.
No. 8. Stopped and backed in 24 $\frac{1}{2}$ seconds.

The Barnum & Richardson Manufacturing Company, of Chicago, have just completed a new building for their foundry, in which they expect to cast 140 car wheels per day. Their old shops turned out from 60 to 100.

Contributions.

Mileage of Railroads of Each Gauge in Use in the United States.

SAN FRANCISCO, April 27, 1873.

To THE EDITOR OF THE RAILROAD GAZETTE:

I send you a table compiled, showing the different gauges of railroads in use in the United States and the road-bed mileage of each, the number of distinct corporations, the weight of rail per yard, average lowest and highest used on each road, as covering a subject, I think, of practical interest to those interested in railroads, whether engineers, builders or capitalists. Much has been written on the subject of gauge by those governed by prejudice or interest in favor of one or another, and the opinion of both parties, as it often happens, are partially correct. It is well and desirable at this time, as it is satisfactory, to have facts in place of theories, from which we can form what judgments we please, if we desire or are interested in doing so, and what will particularly apply to an existing case. Statistics are these facts, as showing what does exist, and upon such facts decisions are often formed for a particular case, making most practicable and desirable, under the circumstances, what would otherwise admit of argument. So I judge it is with railroads. What gauge is best, taken in the abstract, probably never will be decided and will always be a matter of opinion, as much depends upon locality, resources, present trade, prospective trade and a hundred other reasons, as manifold as the different minds of men.

There are 158 roads with a mileage of 2,622 built and 15,420 in progress or projected, the gauge of which cannot be ascertained. There are railroads in Canada having a gauge of 3ft. 6in., but I can find no record of any such existing in this country. The five-feet gauge is almost entirely confined to the Southern States, though it is a question what originally caused it to be adopted. We have no roads in this country of the seven-feet gauge used on the English railways. Although an accident was the first cause of the adoption of the 4ft. 8 $\frac{1}{2}$ in. gauge, it seems to be the present and future standard of the United States. The three-feet gauge has come rapidly into favor during the past year, and will no doubt well answer its purpose. One hundred and eighty-four of our railroads have a weight of rail per yard of 56 lbs. Why this weight should be so popular and so often chosen it would be of interest to learn.

In this account of distinct corporations, roads leased are not counted. It is noticed that as compared with the ratio of increase of railroad mileage, the number of distinct corporations grows less, which to patriots and political economists might be a proper cause for grief and alarm. The tendency to concentrate in large monopolies can not be beneficial to the country at large, decreasing the energy and encouragement to industry called forth by a greater number of medium-sized and fairly prosperous companies.

LAURENCE BRADFORD.

MILEAGE OF THE GAUGES OF RAILROADS IN USE IN THE UNITED STATES.

Miles of Distance.	Mileage.	Gauge.	Rails, weight per yard					
			Built.	In progress or projected.	Distinct Corporations...	Average weight.	Lowest weight.	Highest weight.
					Ft. in.			
2,291	14	6 0	18	58	45	70		
1,698	118	5 6	18	56	50	75		
		5 9 $\frac{1}{2}$	1	45	45	45		
9,451	2,899	5 0	61	54	45	68		
1,862	314	4 10	17	55	40	62		
1,625	—	4 9 $\frac{1}{2}$	4	58	56	60		
		4 9 $\frac{1}{2}$	1	60	60	60		
330	163	4 9 $\frac{1}{2}$	4	55	50	56		
2,436	682	4 9	17	55	45	67		
290	—	4 8 $\frac{1}{2}$	2	56	56	56		
38,778	7,791	4 8 $\frac{1}{2}$	275	56	40	80		
20	180	4 8	—	56	56	56		
1,018	—	4 4 $\frac{1}{2}$	1	56	56	56		
84	—	4 3	2	48	36	56		
4	—	4 1	1	45	45	45		
19	—	4 0	1	57	57	57		
494	2,497	3 0	17	35	24	56		
60,423	14,693	—	492					

In the RAILROAD GAZETTE of September 23, 1871, (Vol. III., page 287) was given, under the head of "Some Railroad Statistics," the following table of the gauges of all the railroads enumerated in "Poor's Manual" of that year:

Gauge.	No. of railroads.	Gauge.	No. of railroads.
3 feet.	2	4 feet 9 $\frac{1}{2}$ inches.	3
" 6 inches.	2	" 9 $\frac{1}{2}$ "	1
" 3 "	1	" 9 $\frac{1}{2}$ "	7
" 3 $\frac{1}{2}$ "	1	" 9 $\frac{1}{2}$ "	1
" 5 $\frac{1}{2}$ "	1	" 10 "	30
" 6 "	6	" 10 "	74
" 8 "	3	" 12 "	1
" 8 $\frac{1}{2}$ "	307	" 9 "	1
" 8 $\frac{3}{4}$ "	2	" 10 "	31
" 9 "	13		

We do not know from what sources Mr. Bradford has collected his information, which gives 432 corporations for the United States in 1873, against our 587 in the United States and Canada in 1871, but discrepancies in numbers may be accounted for by the inclusion of several corporations under one head in some statements, as, for instance, the Erie works, we believe, twelve leased lines. There are no railroads of 6-feet gauge in Canada, and we believe that no 6-foot road has had its gauge changed since our table was made up. Yet we gave 31 roads of that gauge, while Mr. Bradford gives but 13. We gave nine different gauges, while Mr. Bradford gives 17. Our table gave one gauge peculiar to Canada (3 feet 6 inches); a railroad of that gauge is under construction in Mississ-

sippi), but omitted the 5ft. 6in. gauge, which was at that time the common gauge of Texas and West Louisiana. But Mr. Bradford gives no 5ft. 9in., 4ft. 9 $\frac{1}{2}$ in., 4ft. 6in., 4ft. 3 $\frac{1}{2}$ in., and 4ft. 3 $\frac{1}{2}$ in., all of which we found given in Poor's Manual, while he gives 4ft., 4ft. 1in., and 4ft. 4 $\frac{1}{2}$ in., which we did not find nor give.

Mr. Bradford's table of lines "in progress or projected" one will do as well not to put much faith in. We can bear witness that the mileage "projected" is very much greater than he names, and much greater, we think, than the existing mileage. But we have learned to place little faith in a projected road, and not fully to believe in one—for counting purposes, at least—until the rails are down.—EDITOR RAILROAD GAZETTE.

California Freight Rates.

To THE EDITOR OF THE RAILROAD GAZETTE:

I believe the impression pretty generally prevails—at least it is studiously inculcated on this side by certain parties hostile to the railroad—that freight rates in California are exorbitantly high. The way to determine that matter beyond dispute is to take a given number of railroads in the Central States, with a supporting population somewhat approximating that of California in density, average the freight rates on them, and place the average in a table opposite the rates charged by the Central Pacific Railroad. Let us take, for instance, the Illinois Central, the Hannibal & St. Joseph, the Chicago & Northwestern, and the Union Pacific railroads. Then take given distances on each, the rate for one ton per mile, and the rate for 100 pounds the whole distance, and the table will stand as follows:

MILES OF DISTANCE.	LIVE STOCK.		MERCANDISE.	
	Eastern R'de Averaged.	California Road.	Eastern Roads.	California Read.
15	6 $\frac{1}{2}$	9 $\frac{1}{2}$	5 $\frac{1}{2}$	7
28	8 $\frac{1}{2}$	6 $\frac{1}{2}$	6 $\frac{1}{2}$	5
47	12 $\frac{1}{2}$	8 $\frac{1}{2}$	8 $\frac{1}{2}$	4
93	18 $\frac{1}{2}$	4 $\frac{1}{2}$	18	3
108	20	3 $\frac{1}{2}$	15	3
158	28 $\frac{1}{2}$	18	2	2
200	32 $\frac{1}{2}$	8 $\frac{1}{2}$	21	5

STEAM VS. HORSEFLESH.

Probably there never was on the continent, outside of the supply trains which followed our armies into the rebellious Confederacy, so extensive, so well organized, and so homogeneous a system of wagon-freighting as existed in California in the best days of placer mining. And certainly there never was raised on earth such a prolonged and dolorous ulceration as the teamsters and mountain hotel keepers have raised and keep up to this day over the decadence of that system in consequence of the construction of the transmontane railroad. Let us compare the rates charged in those days, as estimated by Messrs. Whitney & Co., one of the largest shipping firms of the State, with those now prevailing. We will take the route between Sacramento and Virginia City, Nevada. It would not be fair to go back to the "flush times," when a man got \$16 a day for common labor, and the charge for an operation for cataract was \$2,000, but we will begin with 1862.

In 1862 the rates per pound were 4 $\frac{1}{2}$ @5c., or \$90 to \$100 per ton; June and July, 3 $\frac{1}{2}$ @4c., or \$70 to \$80 per ton; August, 3@4c.; September and October, 4 $\frac{1}{2}$, 5@5 $\frac{1}{2}$; November and December, 6@7c.; January 7@10c., or \$140 to \$200 per ton. Flour and grain were 4c. less per pound.

In 1863, February and March, 7@8c.; April, 6@7c.; June, 6@8c.; August, 3 $\frac{1}{2}$ @4c.; September, 5@6c.; October, 4 $\frac{1}{2}$ @5c.; December, 7@8c. Flour and grain 4c. less.

In 1864, February, 6@7c.; May, 4@5c.; August, 3@3 $\frac{1}{2}$ c.

In 1866, February line over the mountains having reached Alta (altitude 3,612 feet), the rates were about as follows: Sacramento to Virginia, \$2.60 per hundred, of which \$1.82 $\frac{1}{2}$ was for the route to the railroad.

These averages are made upon fair-paying charges and steady prices. The fluctuations caused by temporary opposition, or the necessities of teamsters who drove to the plains to winter cattle and took "back-loads" at nominal figures, are not considered. We now come to the railroad rates.

June 19, 1868, the Central Pacific reached Reno, Nevada, the point of departure for Virginia. From that date to July 1, 1869, the rates were \$23 per ton; to January 1, 1872, \$18.50 per ton; to date (and it is given out by authority that the rate will go no lower, except at the option of the company) \$

Report of the Lake Shore & Michigan Southern Railway for 1872.

The President and Directors of the Lake Shore & Michigan Southern Railway Company respectfully submit to the stockholders the following report for the year ending December 31, 1872:

HISTORY OF ORGANIZATION.

The Company is a consolidation of the following roads: The Buffalo & State Line Railroad—extending from the city of Buffalo, in the State of New York, westward to the State line of Pennsylvania. 68 miles. The Erie & Northeast Railroad—extending from the State line of Pennsylvania to the city of Erie, in the State of Pennsylvania. 20 miles.

These two roads were consolidated, under the name of the Buffalo & Erie Railroad Company, in the year 1867, in pursuance of laws of the States of New York and Pennsylvania.

The Erie & Northeast Railroad—extending from the State line of Pennsylvania to the city of Erie, in the State of Pennsylvania. 68 miles.

The Cleveland, Painesville & Ashtabula Railroad—extending from the city of Erie, in the State of Pennsylvania, to the city of Cleveland, in the State of Ohio. 95 miles.

The Cleveland & Toledo Railroad—extending from the city of Cleveland, in the State of Ohio, to the city of Toledo, in the State of Ohio. 113 miles.

With a branch (or Northern Division), extending from Elyria (26 miles west of Cleveland), via the city of Sandusky, in the State of Ohio, to Millbury (junction with main line near Toledo). 76½ miles.

These two roads last mentioned were consolidated, under the name of the Lake Shore Railway Company, in March, 1869, pursuant to the laws of the States of Ohio and Pennsylvania.

The Michigan Southern & Northern Indiana Railroad—extending from the city of Toledo, in the State of Ohio, to the city of Chicago, in the State of Illinois. 344 miles.

This road was consolidated with the Lake Shore Railway Company, under the name of the Lake Shore & Michigan Southern Railway Company, in May, 1869, pursuant to the laws of Pennsylvania, Ohio, Michigan, Indiana and Illinois.

In August, 1869, the Buffalo & Erie Railroad Company was consolidated with the Lake Shore & Michigan Southern Railway Company, under the name of the Lake Shore & Michigan Southern Railway Company, pursuant to the laws of the States of New York, Pennsylvania, Ohio, Michigan, Indiana and Illinois, thus forming a continuous line of railway, 540 miles in length, between the cities of Buffalo, in the State of New York, and Chicago, in the State of Illinois.

This company owns branches as follows:

Ashtabula, Ohio, to Jamestown, Pa. 36 miles. Elyria, Ohio, via Sandusky, to Millbury (junction with main line). 76½ miles. Toledo, Ohio, to Elkhart, Ind. (Air Line). 131 miles. Adrian, Mich., to Jackson, Mich. 46 miles. Adrian, Mich., to Monroe, Mich. 33 miles.

The following roads are under separate organizations, but the capital stock thereof is owned wholly by this company:

The Detroit, Monroe & Toledo Railroad—extending from Toledo, in the State of Ohio, to the city of Detroit, in the State of Michigan. 65 miles. The Kalamazoo & White Pigeon Railroad—extending White Pigeon, Mich., to Kalamazoo, Mich. 37 miles. The Northern Central Michigan Railroad—extending from Jonesville, Mich., to Lansing, Mich. 60 miles.

The following roads are operated by this company under leases:

The Jamestown & Franklin Railroad—extending from Jamestown, Pa. (where it connects with the Ashtabula Branch), to Oil City, Pa. 51 miles.

This company has a large proprietary interest in this road, and operates it under a lease for 60 per cent. of the earnings.

The Kalamazoo, Allegan & Grand Rapids—extending from Kalamazoo, Mich., to Grand Rapids, Mich. 58 miles.

The terms of this lease are, the payment of interest on bonds and stock amounting to \$103,800 per annum.

That portion of our main line from Toledo, Ohio, to Adrian, Mich., 33 miles, was acquired by a perpetual lease from the Erie & Kalamazoo Railroad Company, by the terms of which this company pays the sum of \$30,000 per annum.

Under a contract with the Cleveland, Columbus, Cincinnati & Indianapolis Railroad Company, this company has the right to use their track between Cleveland and Berea (12 miles) for all passenger trains, at an annual rental of \$42,000 for 60 trains per week; for any trains beyond that number, \$8 per train.

The whole number of miles of railroad owned and leased by this company is 1,136.

The company now has 222 miles of double track (independent of its double lines between Cleveland, Ohio, and Elkhart, Ind.), and in addition 310 miles of side tracks.

During the year 1872, the Northern Central Michigan Railroad was opened from Jonesville on our main line 70 miles west of Toledo to Lansing, the capital of Michigan, a distance of 60 miles.

This company has made large advances in aid of the construction of this road, and now controls and operates it. It is known as the Lansing Division of this road.

EQUIPMENT.

During the year 1872 the equipment was increased to the extent of 72 new engines and 1,718 new cars of various classes, at a cost of \$1,953,852.90.

The equipment at the close of the year 1872 stood as follows:

Engines.....	418
Passenger cars—all classes.....	243
Freight cars—all classes.....	9,026

CAPITAL STOCK.

The capital stock of the company is \$50,000,000. Of this sum \$533,500 is the 10 per cent. guaranteed stock of the late Michigan Southern & Northern Indiana Railroad Company. The claim of the holders of a portion of this stock for dividends from 1857 to 1863 (when dividends were not actually earned) is still in litigation.

This claim has been released on 3,506 shares, leaving 1,829 shares unassented.

Since the consolidation of 1869, dividends have been regularly paid at the rate of 8 per cent. per annum—4 per cent. February 1, and 4 per cent. August 1, each year.

On the guaranteed stock, 5 per cent. February 1, and 5 per cent. August 1, have been paid each year.

BONDED DEBT.

The bonded debt of the company now stands as follows:

L. S. & M. S. Railway.....	\$24,971,000	Annual interest.....	\$1,747,970
Detroit, Monroe & Toledo.....	924,000	Annual interest.....	64,000
White Pigeon & Kalamazoo.....	60,000	Annual interest.....	44,000

Total..... \$1,856,650

To provide for the large expenditure required to complete the new double track from Buffalo to Elyria, Ohio, and to procure the additional equipment, etc., the board of directors authorized the issue of bonds to the extent of \$6,000,000. The bonds are dated October 1, 1872, and mature October 1, 1882. A sinking fund provides for the retirement of 10 per cent. or \$600,000 annually. The bonds bear interest at the rate of 7 per cent. per annum, payable April 1 and October 1. \$235,000 of the \$6,000,000 were sold and proceeds used in 1872.

The balance, \$5,765,000, are being sold in 1873, and avails used to pay the temporary loans made to enable the company to press vigorously the construction of 1872.

Including this issue of bonds, the annual charge for interest on the bonded debt, and leases, will be \$2,436,000.

EARNINGS—1872.

From freight.....	\$12,613,499 35
From passengers.....	4,163,513 76
From all other sources.....	814,616 35
Total.....	\$17,591,629 45
Operating expenses and taxes—67 per cent.....	11,839,525 62

Net earnings..... \$5,752,103 84

Interest on funded debt, leases, etc. \$3,039,803 31

Dividends—10 per cent. on guaranteed and 8 per cent. on common stock—and instalment of scrip..... 3,519,446 00

Total..... \$5,559,249 31

Surplus for the year..... \$192,854 53

Gross earnings—1870..... \$13,457,540 86

Gross earnings—1871..... 14,797,975 07

Gross earnings—1872..... 15,591,629 46

Increase in gross earnings 1872 over 1871, \$2,793,654 39, of which \$2,462,146 42 was from freight, \$213,639 93 from passengers, and \$117,868 04 from other sources.

The increase in freight earnings is 24½ per cent.; but as the average rate per ton per mile is less than the rate of 1871 (being 1.37 cents in 1872 against 1.39 cents in 1871), we moved 26½ per cent. more tonnage to secure this result.

It is a fact worthy of note that rates have, of late years, tended downward so steadily and so rapidly that the rate per ton per mile in 1872 is but little more than half the rate of 1868.

The ascertained results are as follows:

1868.....	2.43 cents per ton per mile.
1869.....	2.34 " "
1870.....	1.50 " "
1871.....	1.39 " "
1872.....	1.37 " "

Had we received the rate of 1868 (2.43 cents per ton per mile) on the immense tonnage of 1872, the earnings from freight would have been \$22,133,781, instead of \$12,613,499, yielding instead of barely 8 per cent. upon the capital stock—28 per cent.

These figures thoroughly disprove the assertion, so frequently and so falsely made, that railroad companies make extortionate rates for their own benefit and against the public interest; and they establish the fact that the policy of this company has been to steadily reduce the rates, as rapidly as could be safely done consistently with the maintenance of the property in good condition; and this has been accomplished notwithstanding the very considerable increase of taxation in the six States through which the road runs.

But for the substitution of steel rails for iron rails in renewals of the track, the low rates of 1871 and 1872 could not have been submitted to and dividends maintained.

It has become evident that low rates must prevail, and that a trunk line like this must depend for its prosperity upon the increase of the volume of its traffic, moved on double track steel rails at a moderate rate of speed.

The reduction of the fraction of two one-hundredths of one cent per ton per mile resulted, in 1872, in a loss to our net revenue of \$182,000, which of itself accounts for the increased percentage of operating expenses, not mentioning the very considerable advance in labor and material of all kinds (notably iron and steel) established early in 1872 and maintained through the year.

The earnings from passengers show an increase of \$213,639 93, being 5½ per cent. This is mainly from through business. The earnings from this source, so far in 1873, show a gratifying increase.

The average rate per mile in 1872 on all passenger business was 2.59 cents, against 2.79 cents in 1871.

CONSTRUCTION.

The great work of building the second track from Buffalo to Cleveland, 183 miles, also the 32 miles of new second track between Cleveland and Toledo, is completed.

This gives the company practically a double-track railroad from Buffalo, 440 miles westward, to Elkhart, Ind., 100 miles east of Chicago.

Of this second track, 186 miles was constructed in 1871 and 1872, at a cost of \$3,165,727.

In this work steel rail has been for the most part used.

Great credit is due Charles Collins, Esq., the Chief Engineer, for the rapid and economical construction of this track. It was done while the single track was burdened with sixty trains per day, and yet not one single accident has occurred to these trains by reason of this work, and delays have been almost unknown.

The great advantages arising from the construction of this second track are already realized, in the steady and efficient movement of the large business of the past severe and protracted winter.

In addition to the new second track, there was laid in 1872 53 miles of side track, at a cost of \$1,025,328.77.

The average cost of second track and side track, including widening of masonry and purchase of additional right of way when needed, was, in 1871 and 1872, \$22,000 per mile.

The Northern Division, from Elyria, Ohio, via Sandusky, to the junction with the Main Line at Millbury, near Toledo, was completed early in 1872, at an expenditure of \$309,881.25. Total cost of this extension, \$942,615.47.

The Ashtabula Branch was also completed in 1872, at an expenditure of \$224,498.60. Total cost of this branch, \$1,161,601.37.

In the work of the substitution of stone and iron bridges in place of wood, now nearly completed on our Main Line, there was expended in 1872 \$811,877.82.

The reconstruction of the passenger depot at Chicago, owned jointly by this company and the Chicago, Rock Island & Pacific Railroad Company, was vigorously pushed in 1872, at an outlay, for our half, of \$144,179.42. We expect to occupy this depot May 1, 1873.

At the junction of our Main and Air Lines, just west of Toledo, on a tract of 187 acres owned by this company, a large distributing freight yard has been arranged, with ten miles of tracks, an engine house, a machine shop, water tanks, etc., enabling us to make up trains of through cars for their different destinations, and to run them directly past Toledo, instead of halting them upon the crowded and inconvenient "Middle Ground," as heretofore.

The new grain elevator at Toledo, in place of the old elevator "B" destroyed by fire, is approaching completion, and will be in operation by May 1.

New round-houses have been erected at Buffalo, Ashtabula and Air Line Junction.

Other new structures, imperatively demanded by the increased volume of business, such as water tanks, depot buildings, grain houses, coal platforms, etc., where none existed previously, have been erected.

The expenditure for these items of construction in 1872 amounted to \$474,910.43.

There is much more work of this character yet to be done.

The site for the new general offices at Cleveland, and additional land required at Chicago, Toledo, etc., was purchased in 1872, at a cost of \$167,906.74.

The entire outlay for construction was:

1872.....	\$5,504,217 93
1871.....	3,343,383 70

1870.....	1,113,560 90
Total—three years.....	\$9,961,162 59
For additional equipment:	
Engines.....	Engines.....
1872.....	73
1871.....	47
1870.....	23
Total.....	144
	3,470
	\$3,909,564 25

GENERAL CONDITION OF THE ROAD.

In addition to the new construction, the renewals of track and equipment have been sufficient to make good the annual depreciation. There has been charged to operating expenses in 1872:

New locomotives, to replace those old and worn out..... 19

New cars, to replace those old and worn out..... 256

Miles track renewed with steel..... 79

Miles track renewed with iron..... 103

Miles track renewed with repaired iron..... 108

Total miles track renewed..... 410

Miles of new ties..... 182

We enter upon the year 1873 with the road and equipment in better condition than at any previous period of its history.

We have between Buffalo and Toledo, where the service is the heaviest, about three hundred miles of steel rail.

There is need of further equipment, to carry the great increase of business offered to us and pressed for our acceptance.

We shall proceed with the construction of the new second track between Elkhart and Chicago as soon as practicable, and shall during this year make various improvements, which cannot fail to result in increased efficiency and prosperity.

Statements of the earnings and operating expenses in detail, the financial condition of the company, and the transactions of the past year, in all departments, are hereto appended.

The President and Board of Directors renew their acknowledgment of the energy, fidelity and ability with which Mr. J. H. Devereux, the General Manager, has discharged his responsible duty.

Charles Paine, Esq., General Superintendent, has also executed the duties of his office in a manner entitling him to marked recognition.

The other officers of the company have, without exception, borne the unusual labors of the past year in a manner entitling them to special praise.

We expect for the year 1873 a still further development of the great resources of the line of transportation.

The months of January, February and March show an increased earning of \$690,000 over the corresponding months of 1872.

We have no reason to doubt that this ratio of increase will continue through the year.

It is with confidence that we give to the stockholders renewed assurance of the permanent, substantial and increasing value of their property.

By order of the Board.

HORACE F. CLARK, President.

CLEVELAND, May 7, 1873.

EARNINGS.

1872.....	1871.....

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Operating expenses per train mile—67 per cent.....	1.21
Net earnings passenger trains per mile.....	\$0.60
Freight earning revenue—tons carried one mile.....	910,853,195
Earnings per ton per mile.....	cents, 1.37
Cost per ton per mile—67 per cent.....	0.92
Net earnings per ton per mile—33 per cent.....	0.45
Freight not earning revenue (being for use of the company)—tons moved in freight trains one mile.....	29,129,012
Cost, at 93 100 of one cent per ton per mile.....	\$267,987
Passengers—number carried one mile.....	160,583,403
Earnings per passenger per mile.....	cents, 2.59
Cost per passenger per mile—67 per cent.....	1.73%
Net earnings per passenger per mile—33 per cent.....	0.83%

There were 664,945,394 tons of east-bound freight carried one mile, at an average rate of 1.27 cents per ton per mile, earning \$3,419,063.20—nearly one-half of the gross earnings of the year. West-bound freights amounted to 245,909,801 tons carried one mile at an average rate of 1.66 cents per ton per mile, earning \$4,076,635.57—or less than one-fourth of the gross earnings. Nearly three-fourths of the tonnage is thus seen to have been moved eastward. This is an increase in tonnage mileage of about 23 per cent. on east-bound and the same on west-bound freight. The average rates per ton per mile fell from 1.35 cents to 1.27 cents on east-bound, and rose from 1.50 to 1.66 cents in west-bound freight, making an average reduction from 1.39 to 1.372 cents per ton per mile.

COMPARISON OF RATES EARNED FOR FIVE YEARS.

Year.	East-bound.		West-bound.		Total of through and way freight.
	Through freight.	Way freight.	Through freight.	Way freight.	
1868	1.56	3.49	2.03	4.07	2.43
1869	1.49	3.68	1.78	4.05	2.34
1870	1.13	2.67	1.53	2.84	1.50
1871	1.17	2.35	1.18	2.26	1.39
1872	1.13	2.04	1.49	2.01	1.57

The report contains a copy of a contract between the Lake Shore & Tuscarawas Valley, the Cleveland, Columbus, Cincinnati & Indianapolis and the Lake Shore & Michigan Southern companies, by which the last two companies are to have an interchange of traffic with the first in consideration of their applying 40 per cent. of the gross receipts of all traffic received from and delivered to said road by them to the purchase of the first company's bonds. Also, a copy of a contract between the Mahoning Coal Railroad Company (of which P. H. Watson is President) and the Lake Shore & Michigan Southern, by which the former company secures the right to run its trains from its northern terminus at Andover over the Ashtabula & Jamestown Branch of the Lake Shore road to Ashtabula, dividing earnings in agreed proportions, while the Lake Shore applies 40 per cent. of the gross earnings of traffic to and from this road to the purchase of the Mahoning Coal Railroad's bonds, and has the prior right to lease or purchase the road.

Train Accidents in April.

We give below a record of all the accidents to trains which we have been able to get trace of, including probably most of those which have caused death or severe personal injury:

Early in the morning on the 1st, a freight train of the Indianapolis & St. Louis Railroad ran off at a switch near the Vandalia Line freight house in Indianapolis.

On the morning of the 1st, near Norwich, N. Y., on the Utica, Chenango & Susquehanna Valley Division of the Delaware, Lackawanna & Western Railroad, the rear truck of the tender of a south-bound express train jumped the track just in front of a swing bridge.

On the morning of the 1st, near Cumberland, Ind., on the Pittsburgh, Cincinnati & St. Louis Railway, an entire express train was thrown from the track by a broken rail, and the drivers of the locomotive were wrecked off.

On the 1st, an east-bound freight train on the Pittsburgh, Washington & Baltimore Railway, ran into a mass of earth and rocks that had fallen upon the track near Pultison's, Pa., and was thrown from the track, several cars being telescoped. The engine jumped, but fell under the engine and was fatally injured.

On the afternoon of the 1st, at Mineral Point, Pa., on the Pittsburgh, Washington & Baltimore Railway, a train was thrown from the track, and the fireman in jumping had his foot crushed under the wheels and died of his injuries.

On the evening of the 1st, a north-bound freight train on the Delaware Railroad ran off the track at the Dover depot and was delayed an hour and more.

On the night of the 1st, a mile and a half north of Ridgefield, Ill., on the Wisconsin Division of the Chicago & Northwestern Railway, the engine and baggage car of an accommodation train went into the ditch, the engine turning bottom up, and all cars left the track, which was blocked nearly 24 hours.

Early in the morning on the 2d, a freight train on the Erie Railway ran into the rear of a coal train which had been detained about a mile east of Port Jervis, N. Y., destroying the caboose and a number of coal cars. The caboose caught fire and was burned.

Early in the morning on the 2d, two coaches of a through train from Chicago on the Indianapolis, Cincinnati & Lafayette Railroad were thrown into the ditch by a broken rail, just outside of Cincinnati.

On the 2d, at Spring Creek, a few miles north of Abbeville, Miss., on the Mississippi Central Railroad, as a freight train was backing upon a siding, the caboose and two cars left the track at the switch, and the caboose fell over and killed the conductor. The switch was out of order.

On the afternoon of the 2d, at Ithaca, N. Y., on the Buffalo, New York & Philadelphia Railway, as a north-bound passenger train was within about 300 feet of a bridge over Ithaca Creek, the driving-wheels left the track, and before the train could be stopped the engine struck the bridge, knocked it down, and fell with it into the creek. The baggage car caught on the abutment. The engineer and fireman saved themselves by jumping.

On the night of the 2d, a freight train on the Erie Railway ran off the track between Deposit and Hancock, N. Y., and blocked the down track about six hours.

On the morning of the 3d, the engine and tender of a south-bound passenger train of the Richmond, Fredericksburg & Potowmack Railroad jumped the track in the city of Richmond, Va., on the track which connects that road with the Richmond & Petersburg.

On the 3d, near noon, as a south-bound mail train on the Harlan Extension Railroad was passing Hunt's Crossing, half a mile north of Bennington, Vt., the track spread, and, the engine, tender and a muk car having passed safely, the bag-

gage car, mail car and a coach went off and down a bank 12 feet high, the coach landing bottom up. Eight persons were injured.

On the 3d, at Monmouth Junction on the New York Division of the Pennsylvania Railroad, there was a collision between two freight trains which caused considerable damage.

On the afternoon of the 3d, at French Village, Ill., on the St. Louis & Southeastern Railway, about seven miles east of St. Louis, a passenger train of three coaches was slackening up to permit a freight train in front of it, which was nearly at a halt, to enter a switch and let it pass. A construction train was following the passenger and kept on at full speed, striking the rear of the passenger train, shoving that train against the freight in front, breaking into the rear coach and breaking its own engine so that the last-named coach was filled with scalding steam. The conductor saw the approaching construction train and warned his passengers to jump, but it was too late for many of them to get out. Two passengers were killed, both while jumping out, and ten were more or less injured. All three trains were moving westward. The engineer of the construction train is blamed, as the passenger train had passed him not long before.

The coroner's jury brought in the following verdict:

"That Conductor Michael Ward and Engineer John Fanning, of the construction train, are grossly and culpably negligent, the conductor for starting out after the passenger train had passed him ahead of time, and the engineer for running at too great speed; also, that the conductor of the passenger train neglected his duty, and violated the rules of the road in not sending out a flagman to warn the construction train of impending danger; also, that the railroad company is somewhat responsible in not informing the conductor of the freight of the discontinuance of certain trains, thereby detaining his train and occasioning the accident."

The engineer of the construction train was arrested, but its conductor could not be found.

On the evening of the 3d, there was a collision between an east-bound express and a west-bound coal train on the Intercolonial Railway near Truro, Nova Scotia, by which the engineer and baggage master of the express were killed, no passengers being injured.

On the night of the 3d, as west-bound express train on the Hannibal & St. Joseph Railroad was running between Chillicothe and Utica, Mo., the Pullman car "Macon" at the rear of the train caught fire and was totally destroyed. It was old and worth perhaps \$8,000.

On the night of the 3d, at Weisburg, Ind., on the Indianapolis, Cincinnati & Lafayette Railroad, two cars of a freight train were thrown from the track by a broken rail, and the road was blocked about three hours.

On the night of the 3d, seven cars of a freight train on the Erie Railway ran off the track at Lordville, N. Y., and blocked the road seven hours.

On the morning of the 4th, a collision between a passenger and freight train occurred on the Grand Trunk Railway, near Norton Mills, N. H., in which a passenger car was wrecked, but no one was hurt.

On the evening of the 4th, the engine and tender of a south-bound passenger train on the Chicago, Dubuque & Minnesota Railroad jumped the track near Eagle Point, Iowa, where a great rock from an overhanging bluff had rolled across the rails and bent them out of place; they broke loose from the cars and plunged down the steep bank into the Mississippi, injuring the engineer and fireman, the latter dangerously. The baggage car ran into the bluff on the other side of the track and the trucks of the coaches, with the exception of the rear truck of the rear coach, left the rails.

On the night of the 4th, nine cars of stock were thrown from the track of the Chicago & Northwestern Railway near Morriston, Ill., blocking the track six hours.

On the night of the 4th, just north of Leavenworth, Kansas, on the Pacific Railroad of Missouri, the engine of freight train jumped the track at a switch, and came near going down into the Missouri. The road was blocked for a long time.

Very early on the morning of the 5th, near Pittsford, Vt., on the Rutland Division of the Vermont Central Railroad, a north-bound express train struck a stump which had been carried upon the track by a land-slide, and the locomotive almost buried itself in the bank of a cut, and the baggage car passed it and went down a bank 15 feet high on the other side.

On the evening of the 5th, as an oil train of 18 loaded tank cars was backing down the Jamestown & Franklin Branch of the Lake Shore & Michigan Southern Railway, in Oil City, Pa., it struck a mass of fallen rocks, and a part of the train fell into Oil Creek, and others upon the locomotive, which latter caught fire and five were burned, 13 being hauled away by an engine from the round-house. The loss was about \$16,000. One man, who was stealing a ride, was burned to death, and the engineer was slightly hurt.

On the night of the 5th, as a west-bound passenger train on the Pacific Railroad of Missouri was crossing a bridge between Greenwood and Pleasant Hill, Mo., the trestle work gave way, and one sleeping car and one day coach fell through. No one was hurt, but the road was blocked eight hours.

On the night of the 5th, near Ottawa, Kansas, on the Leavenworth, Lawrence & Galveston Railroad, the engine and two cars of an express train were thrown from the track where a culvert had been washed away, and the engineer and fireman were slightly hurt.

On the morning of the 6th, about three miles from West Branch, on the Jackson, Lansing & Saginaw Division of the Michigan Central, the engine, tender, baggage car and one coach jumped the track and went into the ditch, severely injuring the fireman.

On the morning of the 6th, near North Norwich, N. Y., on the Utica, Chenango & Susquehanna Valley Division of the Delaware, Lackawanna & Western Railroad, an engine, tender and thirteen cars of a north-bound coal train ran off the track where the road-bed had been washed away during the night for 200 feet or more. The road was blocked about 24 hours.

About noon on the 6th, four cars of a west-bound milk train on the Erie Railway jumped the track shortly after leaving Lake View, N. J., and were dragged over the ties for some distance without much damage, except to themselves, and causing the blocking of the road about four hours.

On the afternoon of the 6th, a north-bound special freight train on the Fort Wayne, Jackson & Saginaw Railroad plunged into an open draw-bridge over the Wabash & Erie Canal just above Fort Wayne, Ind., and the engine and four cars went into the canal. The bridge and cars were destroyed. The negligence of the bridge-tender is chargeable with the accident.

On the evening of the 6th, near Holton, Mich., on the Muskegon & Big Rapids Branch of the Chicago & Michigan Lake Shore Railroad, an engine and tender used in construction ran off the track and fatally injured two workmen who were riding on the tender. The road-bed, which was there close to the bank of a creek, had been washed away.

On the morning of the 7th, a box-car in a freight train on the Eastern Railroad jumped the track near Eliot, Me., drawing after it nearly all the rear half of the train. Six cars were badly wrecked, but no one was hurt.

On the morning of the 7th, an oil car in the middle of a train on the Chicago, Burlington & Quincy Railroad caught fire, and twenty-two cars were more or less damaged, to the extent, in all, of about \$7,000. It is supposed that the under valve of the oil car had been opened by some persons, for the purpose of stealing oil or out of pure malice, and that the leakage on the track caught fire from the locomotives.

On the morning of the 7th, as a through stock train on the Central Railroad of New Jersey was passing through Elizabeth,

several cars broke loose, and when the train was slackened they struck it with such force that one car was wrecked, a number of horses escaped from it, and one had a leg broken.

On the 7th, there was a collision on the Missouri River, Fort Scott & Gulf Railroad near La Cygne, Kan., by which three coaches and a locomotive were thrown down an embankment.

On the night of the 7th, the engine, baggage car and smoking car of a south-bound passenger train on the Cincinnati, Richmond & Chicago Railroad were thrown from the track by a cow near Richmond, Ind., and the baggageman and one other person were injured.

On the night of the 7th, in Buffalo, N. Y., during a dense fog, a passenger train of the Grand Trunk Railway ran into a switching engine near the Genesee street bridge, and completely wrecked the switching engine and some cars attached. The men on the engines saved themselves by jumping.

About 5 o'clock in the morning on the 8th, on the Logansport & Union Branch of the Pittsburgh, Cincinnati & St. Louis Railway, four miles east of Bunker Hill, Ind., a west-bound immigrant train of ten coaches jumped the track, and several cars were badly wrecked and a number of passengers severely hurt.

On the 8th, a west-bound freight train on the Chesapeake & Ohio Railroad encountered a land-slide near Fort Spring, W. Va. The engine went off the track, the tender ran into the Greenbrier River, and three empty cars followed it. The fireman was killed and the conductor and engineer injured.

On the evening of the 8th, at Kansas City switch, near Cameron, Mo., on the Hannibal & St. Joseph Railroad, a guard rail gave way, and the baggage car of a west-bound passenger train went into the ditch.

On the evening of the 8th, two miles south of Sherman, Texas, on the Houston & Texas Central Railroad, a locomotive jumped the track, "summersaulting three times," according to a telegram.

About 9 o'clock in the morning on the 9th, two miles east of O'Fallon, Mo., and 40 miles northwest of St. Louis, on the St. Louis, Kansas City & Northern Railway, the rear coach of an east-bound passenger train was thrown from the track (by a broken rail, it is supposed) and fell on its side and pulled off the other cars. The rear car also caught fire from its stoves, which was put out soon. Ten passengers were injured.

On the night of the 9th, an east-bound freight train on the Wilmington, Columbia & Augusta Railroad was thrown from the track where a fire in the woods had burned the ties and wood along the track, and the whole train—six cars loaded with rosin, lumber, cotton, etc., and the engine—was completely destroyed by fire. The engine was a new one, and it is said that only the axles can be used again. The loss is estimated at \$40,000. The engineer and the "wood-pass" were injured.

About 5 o'clock in the morning on the 11th, at Roscoe, Ill., on the Madison Division of the Chicago & Northwestern Railway, a north-bound freight train ran off at an open switch, wrecking three cars, tearing up the track and blocking the road 12 hours.

On the morning of the 12th, on the Sussex Railroad, near Andover, N. J., the rear passenger car of a train running about 25 miles an hour was thrown from the track by a broken rail, and one passenger was slightly hurt.

On the morning of the 12th, at Oshkosh, Wis., on the Wisconsin Division of the Chicago & Northwestern Railway, as a train of 49 loaded cars was moving with an engine at each end, a broken rail threw off the forward engine, when the pusher soon doubled up the train, tore to pieces nine cars of wheat, and tore up the track badly. The wreck blocked the road three or four hours.

On the morning of the 12th, at Lathrop, Mo., the junction of the Kansas City Branch of the Hannibal & St. Joseph with the St. Joseph Branch of the St. Louis, Kansas City & Northern, a freight train on the former and a locomotive on the latter came into collision, by which both engines were wrecked.

On the morning of the 13th, a coal train on the Honesdale Branch of the Erie Railroad struck a rock at Blue Eddy, a mile west of Millerville, Pa., causing the engine to run off the track and down to the edge of the river.

On the 13th, in the afternoon, an east-bound freight train on the Erie Railway ran off the track at the west end of the Bergen Tunnel and closed the tunnel for some hours. Three cars were damaged.

On the night of the 13th, near Sauquoit, N. Y., on the Utica, Chenango & Susquehanna Valley Division of the Delaware, Lackawanna & Western Railroad, an axle broke under a car of north-bound freight train, and the car was pretty well broken up, delaying the train several hours.

On the 14th, at four in the morning, there was a collision twenty miles below St. Louis, on the St. Louis & Iron Mountain Railroad, between a south-bound empty and a north-bound loaded ore train, both of which had been ordered to stop at Jefferson switch, where the empty was to take the switch. The loaded train was halted accordingly, but it is said the engineer of the up train had miscalculated his position in the darkness, and so ran by the switch and into the other train. The engines and a few cars were somewhat damaged.

On the morning of the 14th, as a train on the Winona & St. Peter Railroad was backing toward the depot in Mankato, Minn., it struck a cow, and one passenger car was thrown down the bank 10 feet, injuring 17 persons.

On the 14th, a train of thirty cars of coal on the Southern Central Railroad fell through a bridge at Dryden Lake, N. Y.

On the night of the 14th, near West Canaan, N. H., on the Northern Railroad of New Hampshire, two cattle cars and a drovers' car of a stock train were thrown from the track, on account of a draw-bar's pulling out, according to the report we have. Several calves and sheep were killed and others let loose.

On the night of the 14th, a freight and oil train ran off the track of the New York Central & Hudson River Railroad about four miles east of Schenectady, N. Y., and a number of cars were wrecked.

On the night of the 14th, six cars of a freight train on the Utica, Chenango & Susquehanna Valley Division of the Delaware, Lackawanna & Western Railroad ran off the track and were wrecked at Sauquoit, N. Y.

On the morning of the 15th, a switching engine with several freight cars of the Pittsburgh, Cincinnati & St. Louis Railway Company jumped the track near the Union Depot in Indianapolis.

On the night of the 15th, on the Chesapeake & Ohio Railroad near Hinton, W. Va., some laborers who had difficulty with a contractor on the road about their pay, turned a switch and caused a construction train to run into a switch, wrecking both engines.

On the morning of the 16th, a south-bound freight train on the Allegheny Valley Railroad struck a land-slide between Wild Cat and Brady's Bend, and the engine and three cars were thrown into the Allegheny River. The engineer had his shoulder-blade broken, and the fireman saved himself by swimming. Three oil cars in the river and one on the track were burned. A trackman had passed the spot a few minutes before and saw no indications of a land-slide.

Very early in the morning on the 17th, an east-bound passenger train on the Little Miami Division of the Pittsburgh, Cincinnati & St. Louis Railway was thrown from the track by a broken rail near Xenia, Ohio, and one coach went into the ditch.

At 3 o'clock in the morning of the 17th, three miles below Harrisburg, Pa., on the Northern Central Railway, a north-

bound express train struck the end of a freight car which projected from a siding, and badly damaged the boiler of the engine.

On the morning of the 17th, a freight train was wrecked on the Indianapolis, Cincinnati & Lafayette Railroad at Hazlewood, Ind.

On the 17th, at Glen Gardner, N. J., on the Central Railroad of New Jersey, a train ran into and upset a number of cars of coal which were standing on the track.

On the 18th, four cars of cattle on the Albany & Susquehanna Railroad were thrown from the track and wrecked at Slingerland's, N. Y., killing several cattle.

On the night of the 18th, at Carrollton, Ohio, on the Cincinnati, Hamilton & Dayton Railroad, there was a collision between an express and a freight train, by which a fireman had a leg broken.

About 3 o'clock on the morning of the 19th, at Richmond Switch, on the Stonington & Providence Railroad, an express train consisting of an engine, three flat cars loaded with baggage crates, one second-class, two first-class and one smoking car, plunged into the Pawcatuck River, where the bridge had been washed away shortly before. The chasm was nearly 40 feet wide, and the engine leaped it and the fore part of it fastened in the ground above the place of the abutment, the rear and the tender being in the channel. The flats and the second-class car went into the stream, the front first-class car telescoped over the rear of the second-class car and rested on the opposite side of the stream, and the following cars were not injured. The wrecked cars caught fire, and, half covered with water as they were, were burned to the water's edge. The engineman and fireman and five passengers were killed and twenty injured, most of the latter slightly. The bridge was of twenty feet span, and apparently perfectly stable and strong. It had stood about 40 years. A flood prevailed at the time, which carried away a dam just above and with it a wagon bridge, which latter lodged against the railroad bridge and so obstructed the channel while the flood from the pond was rushing through that the current undermined the abutments with great rapidity. No one had discovered it before the accident, and apparently the engineman did not see that the bridge was gone until he was close to the stream, as neither he nor his fireman jumped.

At 5½ o'clock in the morning on the 19th, at Aqueduct, Pa., on the third track of the Pennsylvania Railroad, an east-bound freight train ran into the rear of another freight, knocking five or six cars off the track and damaging the engine considerably, and blocking all the tracks about an hour.

On the night of the 19th, a car of a south-bound express train on the Philadelphia, Wilmington & Baltimore Railroad jumped the track near Gray's Ferry, Pa., and delayed the train two hours.

On the night of the 19th, one of the cars of a south-bound freight train on the Philadelphia, Wilmington & Baltimore Railroad got off the track at Chester, Pa., delaying the train an hour and a half.

On the night of the 20th, in St. Louis, a north-bound freight train on the St. Louis, Kansas City & Northern Railway ran into the rear of a passenger train which was standing at the Biddle street depot, breaking in the rear end of a passenger car and the boiler head of the engine, wrecking a flat car and throwing three other freight cars from the track.

On the morning of the 21st, at Jamestown, Ind., on the Indianapolis, Bloomington & Western Railway, a freight car ran off the track and several cars were piled up, blocking the track for several hours.

On the morning of the 21st, a freight train on the Morris & Essex Division of the Delaware, Lackawanna & Western Railroad ran off the track at Buttermill Bridge, near Washington, N. J. Several cars were wrecked and the track torn up. A brakeman who jumped from the train was slightly injured.

On the afternoon of the 21st, at Lordville, on the Delaware Division of the Erie Railway, as a lumberman was dragging a maple log 18 feet long and two feet in diameter across the track, it caught fast when the butt was about half way between the rails, and just as an express train was approaching. The efforts of the horses caused them to break loose from the log, and the train, going nearly at full speed, struck the end of the log with the cow-catcher, and pushed it along between the rails about 300 feet before it could be stopped, the engineman and fireman hanging on till the train was brought up without much damage.

On the morning of the 22d, there was a collision between a north-bound and a south-bound passenger train on the New Orleans, Jackson & Great Northern Railroad at Byron, nine miles south of Jackson, Miss.

About 5 o'clock on the afternoon of the 22d, some cars of a wood train on the New York Division of the Pennsylvania Railroad were thrown from the track while passing through the Bergen Cut. The cars were slightly damaged, and trains were delayed for about two hours.

On the afternoon of the 23d, an east-bound special train on the Alabama & Chattanooga Railroad, while running about 12 miles an hour, jumped the track just after passing Cuba Station, Ala. Engine and tender landed in the ditch on their backs. The baggage car and passenger car which formed the rest of the train remained on the track.

About 4 o'clock in the morning on the 24th, as a freight train was backing on a side track at Montgomery, Ill., on the Chicago, Burlington & Quincy Railroad, the switch having been left open, an east-bound stock train moving at good speed followed it and struck with such force as to damage considerably both engines and several cars. The switchman confessed.

On the 24th, a north-bound passenger train on the Louisville, New Albany & Chicago Railroad was thrown from the track by a misplaced switch at Elettsville, Ind., and the baggage car and two coaches fell on their sides, injuring one man severely.

On the afternoon of the 24th, 12 miles east of Elko, Nev., on the Central Pacific Railroad, a freight train ran over some cattle and had seven empty cars thrown into the ditch, fatally injuring the fireman.

On the morning of the 25th, at Pensacola, Fla., on the Pensacola & Louisville Railroad, the boiler of a freight locomotive exploded, killing the fireman. The engine had been in use about eleven years.

On the 25th, a coal train on the Auburn Branch of the New York Central & Hudson River Railroad ran off the track at Camillus, N. Y., and delayed trains about an hour.

On the 25th, there was a collision on the New York Division of the Pennsylvania Railroad near New Brunswick, N. J., by which a brakeman was killed.

On the 25th, a freight train on the St. Paul & Sioux City Railroad ran off the track between Blakely and Henderson, Minn., and was got back again, leaving the track in such bad condition that it delayed an express train an hour.

On the afternoon of the 25th, on the Pennsylvania Railroad, in Harrisburg, an engine drawing five cars mounted a rail and blocked both main tracks about three-quarters of an hour. A brakeman who was on the engine was injured in jumping from it.

On the morning of the 26th, a misplaced switch near Ramsey's, on the Erie Railway, threw the locomotive and several cars of an extra freight train down the bank, killing the engineman. It is reported that the switch was misplaced by a trainman on a preceding train.

On the afternoon of the 26th, a freight train of the Chicago, Danville & Vincennes Railroad crossed a drawbridge of a ship in Chicago and halted. Immediately the bridge was opened to let a canal boat pass, and thereupon the engineman of the train, taking it for granted that the bridge was still closed, backed his train till the rear car fell into the slip and upon the passing canal boat, fatally injuring a woman on the boat, destroying the bridge, and breaking in the cabin of the boat.

On the night of the 26th, at Basket Station, on the Delaware Division of the Erie Railway, an east-bound freight train halted on a siding to await the arrival of a west-bound express train—which was three hours late—and an emigrant train following. While waiting the trainmen fell asleep, and when the express passed they awoke and supposed it to be the emigrant train, and it is said that the flagman confirmed this supposition. The train then moved out of the siding and had proceeded about a quarter of a mile when the headlight of the approaching emigrant train became visible. The train was reversed and started back for the siding, but too late to avoid a collision, by which both locomotives and ten or twelve freight and baggage cars were wrecked.

On the evening of the 27th, about five miles east of Meridian, Miss., on the Alabama & Chattanooga Railroad, a passenger train went through a bridge and two cars were pretty well broken up, injuring several passengers.

On the night of the 27th, near the round-house in La Salle, Ind., one sleeping car and one day coach of an express train on the Illinois Central Railroad ran off the track and were so much damaged that they could not be taken on, while the track was blocked nearly twelve hours. A brakeman was seriously injured.

On the afternoon of the 29th, a freight train bound east on the Long Island Railroad was thrown from the track near Hicksville by running upon a new rail which a party of repair men had placed in the track, but had not had time to spike down before the train came upon them. The engine turned over upon its side, dragging the tender after it, and one or two cars left the track, but no one was seriously injured.

On the evening of the 29th, there was a collision between a switching engine and a backing passenger train of the Cleveland, Columbus, Cincinnati & Indianapolis Railway, near the round-house in Indianapolis, by which the cab of the switching engine was torn off.

Near the 1st of the month there was a collision between two freight trains on the Grand Rapids & Indiana Railroad near Fisher, Mich., by which a caboose car was destroyed and a conductor was seriously injured.

Early in the month, on the Chester & Tamaqua Railroad, in Chester, Ill., some employees of a coal company, in trying to dump coal cars on a heavy down grade when the track was wet, permitted the cars to get the start of them, and well towards the edge of the dump. Some empty cars on the dump switch were so close to the main track that they caught one corner of a loaded car, tumbling off the engine and effectually stopping the cars.

Early in the month, near Lee's Summit, Mo., on the Pacific Railroad of Missouri, a freight train ran into some horses which had been running before it and had caught in a cattle guard, and the engine and one car were thrown into the ditch, and the engineman's ankle broken, three horses being killed.

Early in the month a freight train on the New York Central & Hudson River Railroad was thrown from the track near Spraker's, N. Y., by a sudden flood in the Mohawk Valley, which covered the track with three feet of water and ice in some places.

Near the middle of the month, at Danville, Vt., on the Vermont Division of the Portland & Ogdensburg Railroad, two locomotives were thrown off by ice on the track, and an engineer was slightly hurt.

About the middle of the month, as a train of the European & North American Railroad was leaving Bangor, Me., the engine left the track, fell over on its side and was pretty badly damaged, tearing up the track badly and injuring the engineman.

Near the close of the month, two powder cars on the Wilmington & Reading Railroad ran off the track near Coatesville, Pa.

This is a total of 101 accidents to trains, by which 23 persons were killed, and 88 wounded. Twelve of these accidents caused death, and 19 others injury to persons. The most serious accident was that at Richmond Switch, on the Stonington Railroad, by which seven were killed and twenty injured.

These accidents may be classified as to their nature and causes as follows:

DERAILMENTS.		
Unexplained.	34	
Broken rail.	7	
Land slide.	6	
Washing out of road-bed, bridge or culvert.	4	
Cattle on track.	4	
Misplaced switch (once by malice).	4	
Breaking of bridge.	3	
Drawbridge left open.	2	
Defective switch.	2	
Spreading of rails.	1	
Rail left unfastened.	1	
Track damaged by falling rock.	1	
Burning of track.	1	
Ice on track.	1	
Flood over track.	1	
	1-72	
COLLISIONS.		
Unexplained.	8	
Rear collisions.	8	
Head collisions.	4	
Collisions with cars badly side-tracked.	2	
Crossing collisions.	1-23	
Cars burned in train.	2	
Boiler explosion.	1	
Accidental obstruction (no derailment).	1	
Broken axle (no derailment).	1	
Unknown.	1	
	101	

Total ...

For March we reported 112 accidents, 80 being classed as derailments, 28 collisions and four others.

Causes were assigned for 38 derailments both in March and April, but in March 19, or one-half the whole number, were from broken rails, against seven in April, while in the latter month we have twelve accidents directly attributable to water (six land-slides, four wash-outs, one damage to track by rock rolling over it, and one flood over track), against two in March. In April these accidents by floods caused 12 of the deaths and 28 of the injuries.

For April, twenty of the accidents were caused by defects or failures of track, and two by defects or failures of rolling stock, so far as explained.

For the twelve months ending with April we have recorded accidents and casualties as follows:

	No. of Accidents.	Killed.	Injured.
May, 1872.	27	9	33
June	44	63	114
July	31	35	66
August	63	15	49
September	71	24	104
October	90	29	102
November	103	37	114
December	112	42	133
January, 1873.	178	40	199
February	133	25	126
March	112	18	92
April	101	23	88
	1,063	360	1,320
Totals.			

The average number of accidents per day reported was 5.74

in January, 4.75 in February, 3.61 in March and 3.37 in April. The average casualties per month have been 26½ killed and 126½ injured, and the average number of accidents is 131 per month, since the beginning of the calendar year.

The perils of winter and, to some extent, the perils of thaws and floods, are now nearly over, but to balance these lessened risks we have largely increased traffic and greater average train speed.

The Railway Association of America.

This Association met at the St. Nicholas Hotel, New York, on the 14th inst.

There were present Hon. Thomas Allen, President of the St. Louis & Iron Mountain Railroad Company; J. C. McMullan, General Superintendent Chicago & Alton; Henry Wood, General Superintendent Philadelphia, Wilmington & Baltimore; P. B. Loomis, President Fort Wayne, Jackson & Saginaw; W. W. Worthington, Superintendent Fort Wayne, Muncie & Cincinnati; C. W. Chapman, Catawissa & Fogelsville; L. H. Shattuck, Tioga Railroad; A. H. Gorton, Corning, Cowaneque & Antrim; J. M. Osborn, Atlantic & Great Western; J. S. Thompson, Swedesboro Railroad; A. L. Hopkins, Vice-President Illinois Central; H. P. Goodrich, Utica, Elmira; C. Stoltz, Wilmington & Reading; L. G. Fleming, Mobile & Ohio. The President delivered an address which we hope to give in full next week.

The provisions recently made by the General Ticket and Passenger Agents' Association relative to the penalties to be executed against companies which fail to keep the agreements entered into through that Association were presented and advocated by Mr. Charles E. Follett, of the Vandalia Line, and opposed by Mr. James Charlton, General Ticket Agent of the Chicago & Alton, where a committee of that Association appointed for the purpose. There was considerable discussion on this subject, but it was not then acted upon.

The Secretary read the report of the Committee on Uniform National Railroad Time, which recommended that no standard time be adopted at present.

The Secretary read the report of the Committee on Interchange of Cars.

The recommendations of this report were as follows:

"We would recommend that the usual mileage rate of 1½ cents per mile run be continued, and that each railroad party to this arrangement instruct their agents at junction stations to compute with the agent of connecting lines any demurrage that may be levied under these rules for the detention of cars on the following basis:

"Allow three days' grace for transfer at junction stations and for unloading at destination; one day for a distance of 75 miles, or under; one day for each additional 75 miles, or under; all detention over the above, for every day absent, a charge for 60 miles at the rate of mileage of 1½ cents per mile, this charge to be allowed under all circumstances, unless remitted by the road to whom it is payable, upon application from the proper officer of the road paying it, showing good and sufficient reasons for the remittance of such charge. The remitting of any demurrage charge to be left to the discretion of the party who should receive it, if paid.

"Valid excuses for not charging demurrage might be classified:

"Bad order of car from accidents; snow blockade; freight blockade; inability to move from causes strictly beyond the control of the party holding the car, such as washing away of bridges, etc. In the case of wreck, only reasonable time should be allowed for clearing and sending the car home for repairs; or, if done by agreement of the company on whose road it is broken, it shall be done efficiently and promptly, with the understanding that unnecessary delay should make a demurrage charge proper."

The Committee on postal cars and a proper basis for payment for hauling rendered a report, but recommended no basis, recognizing that no single basis would be just for all lines, and that the payment should bear some relation to the charge made to the public for similar service.

The committee appointed to report a standard for the distance between wheels of car wheels set for compromise gauges recommended that such distance be 4 feet 8½ inches from the inside of the flanges, giving one-quarter inch play for the narrowest track.

A communication from the Master Mechanics' Association was received relative to a standard for estimating the mileage of switching engines.

A resolution was presented for the appointment of a "Committee on Improvements," to whom all applications of inventors and patent-holders be referred, and who shall report at each meeting concerning the inventions brought before them during the previous recess, with such recommendations as shall seem to them proper, such report to be published in the Association's transactions; a fee of \$10 to be charged to each person wishing his invention examined, to be applied to the expense of publishing said committee's report.

A resolution was presented, assessing each road belonging to the Association at the rate of 20 cents a mile, to defray expenses; also making an entrance fee of 20 cents a mile on all roads entering the Association after June 1.

Notice was given that a resolution would be offered at the next meeting amending the constitution so that those who have been admitted as members and afterward become disqualified, by reason of a change of office, shall be considered honorary members so long as they remain in the service of any railroad company, and shall be eligible to serve on committees and take part in debates on general subjects.

In accordance with a notice given at a preceding meeting, a resolution was presented to amend the constitution so as to make the President and Vice-President *ex officio* members of the Executive Committee.

The Association then adjourned to meet again Thursday morning at 10 o'clock, when the report on Train Dispatching and others were to be presented. A report of the proceedings of this meeting we will publish next week.

THE SCRAP HEAP.

Prices of Rails in April.

Bigelow & Johnston report the total import of iron rails in April to have been 10,157 tons, and the prices of foreign \$70 to \$72 gold, and of American \$80 to \$85 currency, according to location of mill. The imports for the first four months of the year for three years have been, of iron and steel: 1871, 30,615 tons; 1872, 43,798 tons; 1873, 53,713 tons. In 1873, 25,715 tons of the imports were steel.

Prices of steel rails have been \$110 to \$112 gold for foreign, and \$120 to \$125 currency for American. For old rails, \$54 to \$55 currency for double-heads, and \$52 to \$53 for T or flange have been the prices, scarcely anything having been done. The imports were only 1,109 tons, and the total imports for the four months have been only 4,498 tons, against 17,123 tons in 1872, and 11,057 tons in 1871.

Railroad Manufactures.

B. F. Russell & Co., of Chicago, are now casting 120 car wheels per day, and are enlarging their buildings to a capacity of 200 wheels per day.

J. M. Simmons & Co., of Chicago, commenced business in January last, and turn out about 50 car wheels per day. This can be increased to 80 per day.



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Editorial Announcements.

Removals.—The Chicago office of the RAILROAD GAZETTE has been removed to No. 77 Jackson street, opposite Third avenue. The New York office of the RAILROAD GAZETTE is removed to Room 131, No. 73 Broadway, opposite the upper elevator landing.

Correspondence.—We cordially invite the co-operation of the railroad public in affording us the material for a thorough and worthy railroad paper. Railroad news, annual reports, notices of appointments, resignations, etc., and information concerning improvements will be gratefully received. We make it our business to inform the public concerning the progress of new lines, and are always glad to receive news of them.

Articles.—We desire articles relating to railroads, and, if acceptable, will pay liberally for them. Articles concerning railroad management, engineering, rolling stock and machinery, by men practically acquainted with these subjects, are especially desired.

Inventions.—No charge is made for publishing descriptions of what we consider important and interesting improvements in railroad machinery, rolling stock, etc.; but when engravings are necessary the inventor must supply them.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN OPINIONS, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

NEW WATER ROUTES TO THE SEA.

The Senate Committee on Transportation announces that it will give special attention to the investigation of the feasibility and prospective advantages of the chief existing and proposed routes from the interior to the seaboard, naming them as the Lake & St. Lawrence route, the Lake, Erie Canal & Hudson River route, the James River & Kanawha Canal route, the Georgia Canal route, the Mississippi & Gulf route, and the various railroad routes. The last President's message, which recommended the construction through the General Government of the Georgia Canal and the James River & Kanawha Canal, the present eagerness in the West for cheaper transportation, consequent on unusually low prices of farm products, and some other circumstances, have made the subject of transportation unusually interesting to the public, and doubtless an intelligent investigation, with the aid and testimony of experts, of these various routes, existing and proposed, would be of great value. If, however, the "investigations," like so many others, consist chiefly in hearing the assertions of those who want the new routes opened or the old ones improved by the aid of the public treasury, we shall have counsel darkened by words without knowledge.

In studying any problem in transportation, it is essential first that we should learn what, where and how great are the objects to be transported, and whither they go to be used or consumed. This elementary investigation is most frequently ignored, and consequently we have plans for magnificent routes to places to which traffic does not go, and cannot be made to go to any considerable extent; or outlets for regions which have nothing to let out.

One of the indices to traffic is population: where there are no people, there can be no pressing need for connections to markets. But the amount of population is not a measure of the traffic of districts, but rather the weight of their products for export. A thousand men in a Pennsylvania coal mine may make greater demands on transportation facilities than a hundred thousand in Southern cotton fields. Our great staples of traffic are agricultural products, but of these only one—grain—shows signs of

choking any transportation route. Cotton is one of the most valuable of our productions, but, if compressed, the average yield of 120 acres will be required to load a car, while the average yield of nine or ten acres of corn in Illinois will load the same car. Cattle are another product, less bulky than corn, but much more so than cotton. Cotton, grain and provisions are our chief exports, and, with cattle, the chief products which are transported for long distances for domestic consumption. Lumber, coal and some ores are very bulky staples and leading subjects of transportation; but they are more evenly distributed than the former, and are usually comparatively near the consumers.

It is grain especially, therefore, that feels the transportation tax, and this not only because of its comparatively greater bulk, but because the chief producing districts are now far in the interior. The cotton-producing districts, on the contrary, are nowhere far from the seaboard, and though much of it—more and more every year—never goes to the sea, yet the fact that it can easily reach this channel of the freest competition doubtless has its effect in convincing shippers that the rates they pay on inland lines are not exorbitant. It is evident enough that the chief complaints of the cost of transportation come from the grain-growers, and there is no doubt that they more than any other producers feel that cost. This is pretty generally acknowledged, we believe, and the Senate Committee is likely to seek chiefly for some route or improvement which will relieve the grain-growers. The various routes which they propose to investigate are offered as channels for grain, and their value or worthlessness will largely depend on their fitness for this purpose.

The Lake St. Lawrence route has demonstrated its availability as a route for grain exportation by its use, the rate of increase by that route having been larger than by any other probably, notwithstanding its imperfections. The narrow Welland Canal and insufficient St. Lawrence canals are serious obstacles to the complete usefulness of this route, which with a channel open for lake vessels from Chicago, Milwaukee and Duluth to Montreal, would be almost without question the cheapest route for grain exports to Europe. This to many might seem sufficient proof of its transcendent importance; and these we must remind again that but small portion of the Western grain shipments ever cross the ocean, and that the great market for the breadstuffs of the United States is in the Eastern United States—New England, New York, New Jersey and Pennsylvania. So the value of this and other routes must be measured by their usefulness as connections between these States and the West, as well as between the West and Europe. We will find that the opening of lake navigation below Buffalo will have no effect on shipments to Pennsylvania; it will bring them to a port nearer to the city of New York by about 100 miles, reducing the railroad or canal distance by about one-fourth, and to most of the towns further north the difference will be greater. Oswego, by rail, is nearer to Albany than Buffalo by about 120 miles, and the advantage would apply to all New England supplies passing through Albany. From Boston to Montreal is 337 miles, and to Ogdensburg 409 miles, against 493 to Albany. The difference to intermediate points will vary very much with their localities, but generally we have for New England, especially that part which is a large consumer of Western products, an advantage of less than one-fourth in distance to the St. Lawrence route, over lines, however, which can hardly ever afford to carry as cheaply as the line to Buffalo. The economy of such a saving will probably be something, but not great. The chief value of this route will be as a carrier of foreign exports.

The Lake, Erie Canal & Hudson River route has so long been the route that any description of it or its present advantages is superfluous, and the problem concerning it is how to improve it so that it may maintain its relative advantages over other routes, which for some years have been diverting its traffic.

The James River & Kanawha Canal route is one which has been presented by Virginia as capable of answering the Western demands for cheap transportation. But only a slight examination of it is needed to show that it is fatally defective in two particulars: it does not reach the consumers in the East, nor the producers in the West; and its deliveries would be at a port where vessels would come only for return cargoes. The Ohio River is the main part of the route of which this canal would form the eastern section, and the lack of fitness of this channel for this service is well enough shown by the fact that while it reaches Pennsylvania, a large consumer of Western produce, that State receives very little such produce by it, but obtains nearly all its supplies by rail or lake and rail. Were there such virtue in this water route, we would have barges of grain discharging at Parkersburg, Wheeling and Pittsburgh into the cars of the railroads to Baltimore and New York, as the lake vessels

now discharge so largely into cars of longer lines to New York and Boston. The heavy exports, it must be borne in mind, come not from the vicinity of the Ohio, but chiefly from districts considerably further north.

But this route is an admirable one compared with that proposed from the Tennessee River to the rivers of Alabama and Georgia. It might be worth while to argue that there is scarcely any demand for Western produce on the Gulf and South Atlantic coast, and that to take it there for export is taking it just so far out of its way; but we are saved the trouble of doing this by the existence, before all other routes to the West, of a water channel to the Gulf, infinitely more capacious than any canal, reaching nearly every portion of the country which has heavy exports of food and forage produce. The magnificent system of the Mississippi and its tributaries, by which vessels of considerable capacity from Pittsburgh on the east to Fort Benton, Montana, on the west, and as far as St. Paul on the north, Chattanooga on the southeast and Shreveport on the southwest may, and do, carry cargoes to tide-water, has made argument against canals to the South, as well as the canals themselves, superfluous. Why, on the very Southern rivers with which connection is sought, navigation has almost wholly ceased, not because it is more impracticable than in the early days when they were the sole routes available, but because the planters find it cheaper to ship their produce and receive their supplies by the railroads which have been constructed. Augusta, whose chief port is Savannah, has a shorter route to that place by river than by rail, yet the river traffic is not sufficient—at least it was not a few years ago—to maintain a single steamboat in the trade. At the same time the only steamboats running regularly on the Chattahoochee carried their cargoes, not to the seaboard, but to a railroad within sixty miles of the seaboard. We venture to say that the traffic which would go to tidewater by such a canal in a year would not pay its expenses for a week. It would simply not be used if it were made.

As to the Mississippi Gulf route, it, as we have said, is the oldest of all existing, and has made a record for itself which leaves little room for speculation on its capacity or usefulness. We have often taken occasion to point out its defects as a route for the transportation of grain, the chief of which are that it does not bring the shipments nearer to, but rather further from, the chief body of consumers, and is inferior to others as a route for exports. It is, however, common to depreciate the value of this system of communication, which is immense, though not to the interests which now most need cheap transportation.

As to the railroads, which form the subject of the sixth and last inquiry of the Senate Committee, we will only say that we hope that it will succeed in securing all the information it seeks "during the recess" of Congress. They have been the subject of our investigations during the period of the existence of the RAILROAD GAZETTE, and we assure the Committee that it will find it worth all the time and abilities they can spare for it.

Combination of the Chicago & Northwestern and the Milwaukee & St. Paul.

It is announced positively, and so far without contradiction, that these companies have agreed, lacking only the consent of some representatives of foreign stockholders, to pool their earnings from the present time until April 1, 1880, in the proportion of 60 per cent. for the Chicago & Northwestern and 40 per cent. for the Milwaukee & St. Paul. The Peninsular Division of the Northwestern is not included in the arrangement. The agreement, it is said, only waits for the approval of Mr. Ten Have, Frzn., the representative of the German and Dutch stockholders in the Northwestern, who is now on his way from Amsterdam to New York.

The present mileage operated by the Chicago & Northwestern is 1,404 miles, and by the Milwaukee & St. Paul 1,236, and many of their lines come in direct competition with each other. By the last published report of the Northwestern Company (which, however, only comes up to May 31, 1872) the earnings for the year ending that date (excluding those of the Peninsular Division) were \$10,601,547, and for the preceding year \$10,810,341. The net earnings for the two years were: 1871-72, \$4,165,006; 1870-71, \$4,885,465. The gross earnings of the Milwaukee & St. Paul were for 1872, \$6,957,771; 1871, \$6,690,697; 1870, \$7,421,061. The net earnings for 1871 were \$2,840,341; for 1870, \$2,777,787. The report for 1872 has not yet been published, and we have no statement of the net earnings for that year. The reports do not cover exactly the same period of time, but it will be seen that for the two last years covered the gross earnings were nearly in the proportion in which it is proposed to pool them—60 and 40 per cent. By the last report the capital account of the Northwestern was: stock, preferred, \$21,067,663; common, \$14,810,980; total stock, \$35,878,643. The bonded debt at the same time was \$20,474,000,

making the whole capital account \$56,352,643, or \$40,142 per mile. The capital account of the Milwaukee & St. Paul was, by the last report, \$40,779,100, of which \$11,822,500 was common stock, \$10,825,100 preferred stock, and \$18,130,500 funded debt. This has since been increased by the issue of \$2,000,000 in common stock and \$2,511,000 in convertible bonds, to cover the cost of the new Chicago line, making the present capital account \$45,279,100, or \$36,634 per mile.

There is no doubt that by a combination the two lines will be able to do their work better, at a greater profit to themselves and a less cost to the public; but one can but deplore that such an agreement was not made before the two companies had spent two or three millions each for lines which are not needed, the interest on the cost of which serves only to increase the cost of transportation to these two companies.

The Lake Shore Report.

The report of this company, a large part of which we give elsewhere, is in itself so complete that it leaves us little to say, and that little must be mostly extracts or deductions from the parts of the report which we do not re-publish. Indeed, the plan of the report is worthy of special notice, being such as to give very complete information of the property, as well as of its workings during the year and its financial condition. If there were but one railroad in the world, and that one did not increase its mileage and equipment, it might be well enough to state its finances and operations without any description of itself; as one might give the statistics of the world's productions without mentioning its dimensions; but we cannot well determine the true position and prosperity of a railroad without comparing it with other railroads, or with some ideal standard railroad which we have established from our study of many. The definite and detailed description of the lines of the company with which this report opens, therefore, seems to us peculiarly appropriate; and the enumeration of the companies by whose successive consolidations the Lake Shore & Michigan Southern, as it is to-day, was formed, is also a peculiar and valuable feature which might well be imitated. The history of a railroad corporation twenty years old is in this country often a mystery, whose secret is contained in documents which have not been opened for years, or in the memory of two or three elderly men who are likely to take their knowledge from the world with them. It certainly should be a satisfaction to a stockholder to be able to trace the history of his property from its origin.

The terms of all leases are also definitely stated, as well as some of the more important contracts with other companies for use of track or interchange of traffic. Earnings and expenses for two years are given in great detail for the whole property, but not for the various branches; so we are not able to learn how profitable or unprofitable each one may have been. The date of the opening of each new extension, or section of an extension, is given, and the *average* mileage worked during the year, which latter is essential to an understanding of the growth of traffic. The length of double track and side tracks is also given for each division. The accounts of new construction and equipment are also full and minute, and the statements concerning traffic are unusually complete and suggestive, the amount and earnings being given for each direction, and for each station, besides tables of the amounts of each staple forwarded from each station, with tonnage and percentage of each staple for the whole road.

These latter features (which are not peculiar to this company's report, however) give the material for a study of the sources of the road's traffic, and the relative value of different staples and stations to its business.

A feature of the report, which, if not peculiar, is yet unusual enough, we are sorry to say, to call for notice, is a map of the company's lines which does not lie. It is not an elegant map, probably not minutely accurate, but it shows the sinuosities of the line, where such exist, and does not distort the face of the country for the sake of appearing at an advantage over its neighbors.

Leaving the plan of the report and considering its matter, we see that with an average of 1,061 miles of road (and a largely increased equipment) it earned \$17,591,629.46, or \$16,682 per mile, at a cost of \$11,839,525.62, or \$11,177 per mile, leaving net earnings of \$5,505 per mile. In 1871, with an average of 1,013 miles of road, it earned \$14,797,975.07, or \$14,608 per mile, at an expense of \$9,779,806.23, or \$9,654 per mile, leaving net earnings of \$4,954 per mile. The increase in net earnings per mile was just 10 per cent, but the total increase in net earnings was \$733,935, or 14½ per cent, there having been during the year an expenditure for new construction and equipment of \$7,458,070, so that the increase in net earnings was nearly equal to 10 per cent, on the addition to the investment, though of course the improvements were utilized only for part of the year. The addition to equipment, which, when there is full employment for it, as there is on this road, is the most productive investment possible on a railroad, was more than 21 per cent. in locomotives and nearly 23 per cent. in cars, and that such an increase was demanded is shown by the fact of the increase in tonnage mileage of 26½ per cent., passenger mileage having meanwhile increased by nearly 14 per cent. As with most other railroads, the growth in earnings is made with a reduction in average rates. For the three years past, the tonnage mileage, average receipts per ton per mile, and total freight earnings have been:

	Tonnage mileage.	Receipts per ton per mile.	Freight earnings.
1870	569,833,666	1.50	\$8,658,602
1871	720,658,818	1.39	10,151,331
1872	910,855,195	1.37	12,613,499

The reduction in the average rate is most striking, however,

when we take a period of five years. The average receipts, beginning with 1868, having been 2.43, 2.34, 1.50, 1.39 and 1.37 cents per ton per mile, respectively, and the decrease in the period being 44 per cent. The average rate on east-bound through freight in 1872 was but 1.13 cents per ton per mile, which, we think, can leave but a narrow margin for future reductions, which, however, are likely to be made to some extent. The greatest opportunity for an improvement in the working of freight business would seem to be in an increase in shipments westward, which are seen to be only about three-eighths as great as the eastward shipments, leaving an enormous number of cars to go west empty and unproductive. This is, however, the condition of all or nearly all roads to the West, and the importance of encouraging freights westward and developing new traffic in that direction is well understood, though perhaps not always sufficiently appreciated. The growth, naturally, is chiefly in the other direction; and though this road reports an increase of 19 per cent. in west-bound tonnage against 17 per cent. in east-bound for 1872, the tonnage mileage was 26.9 greater in east-bound, against 25.1 in west-bound freight.

Of the entire tonnage, 45.2 per cent. consisted of farm products, 26.5 being grain and flour. Lumber and other forest products formed 10.4 per cent.; merchandise, manufactures, and other articles, 22.1 per cent., while petroleum, coal, stone and lime gave 1.81.

The passenger traffic on this road seems to have increased more than on most lines, the increase in mileage for the year having been 14 per cent., being nearly 19 per cent. in through and 11½ per cent. in way, with an increase of earnings of 16½ per cent. on through and 2½ per cent. on way. The increase of traffic here also is seen to be accompanied by a decrease in rates.

Altogether the property is seen to be in a very healthy condition. Large as was the increase of earnings in 1872, the first quarter of 1873 showed an increase of 20 per cent. over 1872, and the new improvements are likely to be a most excellent investment. The diversion of traffic from two of its great feeders has been looked upon by some as likely to seriously cripple the road's resources; but, with the current increase in traffic, but a small proportion of which can be coming from those feeders, and that less profitable than the average, the road could lose the entire receipts from all the traffic received and forwarded from Cleveland and Toledo, and have its net earnings nearly equal to last year's. Of course there is a very large and profitable traffic at these stations aside from what those on other railroads afford, while their new connections can only affect through business, which is the least profitable.

Record of New Railroad Construction.

This number of the RAILROAD GAZETTE has information of the laying of track on new railroads as follows:

Cairo & Fulton.—Track laid from Little Rock, Ark., southward 7 miles. *International & Great Northern.*—Extended from Tyler, Texas, northward 15 miles to Lyndale. *Nashua & Acton.*—Track laid from Nashua, N. H., southward 24 miles to a junction with the Fitchburg Railroad at West Concord Junction, Mass. *Allegheny Valley—Eastern Extension.*—Extended from the recent terminus eastward 5 miles to New Bethlehem, Pa., 21 miles from the junction with the main line at Red Bank. *Texas & Pacific.*—Extended on the eastern section from Longview, Texas, westward 10 miles.

This is a total of 61 miles of new railroad.

Annual Conventions.

The following societies will hold their annual conventions at the time and places named:

The American Society of Civil Engineers, on the 21st and 22d of May, in Louisville.

The Master Car Builders' Association, on the 11th, 12th and 13th of June, in Boston.

Particular attention is called to the Master Mechanics' meeting, which we have heretofore announced as beginning May 6, as was announced also on the cover of the report of the last convention.

THE BATTLE OF THE GAUGES is now being waged in Mexico with a virulence which can hardly be surpassed, and with a lack of knowledge which is sometimes provoking and sometimes ludicrous. We see in the various Mexican newspapers the most absurd statements concerning the advantages of narrow-gauge railroads, which one would charge to the unscrupulousness of those making them were they not often so absurd that they are more easily accounted for by supposing ignorance. To read one of these papers one might think that the civilized world no longer builds roads of the standard gauge, and that engineers are almost unanimous in favor of the narrow gauge—the reverse being the fact. We read of the adoption of the narrow gauge in England, where there is not more than fifteen miles of such road, and where no serious attempt has been made to construct more than one or two more above ground. If the question were to be settled, by weight of authority simply, the narrow gauge would be dead already.

As to the decision of the question in Mexico, let no one think that it depends upon the merits of the two gauges, or that decision of these on a scientific basis will settle the whole matter. It is rather whether General Rosecrans or Colonel Plumb shall have a contract with the nation for the construction of several hundred miles of railroad, in which the one who gets the contract will receive very large subsidies. Imagine such a question before our own Congress, and it will be easy to see that the merits of the schemes might have less to do with their success than the diplomacy of the schemers. There is, alas! a "lobby" in Spanish-American legislatures as well as in the nest of our own bird of freedom; though it is not known by that name, and perhaps uses somewhat different arguments, furnishing itself with those which the Spanish-American legislator is most

susceptible to. According to the latest news, as we understand it, the administration, which had been authorized to make a contract with General Rosecrans declines to approve of his scheme, and now counts it as out of the field altogether. But meanwhile the Congress, which has the power to pass laws making contracts, has developed a majority in opposition to the administration, which is likely enough to make its opposition felt on all questions. But then this Congress has but a few weeks more to live; so, for ought we see, the question is likely to be relegated to chaos and black night—or to the election of a new Congress, which some may say is the same thing. Imagine a popular election in which the rallying cries should be, "Don Alfonso and the narrow gauge," "Lerdo and the standard forever!" That would be an opportunity for engineers to take the stump and apply the principles of mechanics to carrying an election.

Later information, in papers of the 1st inst., is to the effect that the Congress, in an election of officers for the month of May, developed an administration majority, "which is a favorable augury of its good disposition and a desirable harmony between the legislative and executive powers." Following this announcement in the *Train d'Un* is this concerning the railroad question:

"The railroad question is more than ever the order of the day. The government, if it has not already done so, will probably report to Congress on it very soon. General Rosecrans has redoubled his efforts to realize his projects; General Palmer has returned to give him his support; articles in the newspapers and pamphlets abound, and we perceive with pain that the strife has developed a decided animation. General Rosecrans seems to be in a state of war; we see him combating, with much valor, even the *Official Journal*. It is hardly probable that Congress can take any decisive action, during this session, on the initiative of the government; and Mr. Rosecrans, in order to ward off this danger, has thought it best to apply to Congress directly, to make his propositions to it, supporting his demand by the deputation from the State of Coimbra. Mr. Plumb is distinguished by his silence and his patience, and we have heard nothing said for some time of the managers of the Vera Cruz Railroad, who have almost all gone to Europe."

THE RAILWAY ASSOCIATION OF AMERICA has just closed its first day's session as we go to press, and a brief report of its proceedings is given elsewhere. The attendance was not very large, but the proceedings were of considerable interest. A fuller report, with the proceedings of the second day's session, will be given next week.

THE MASTER MECHANICS' ASSOCIATION began what promises to be one of the most interesting of its conventions in Baltimore last Tuesday, and a brief report of that day's proceedings is given elsewhere.

NEW PUBLICATIONS.

A System of Full Wrought Tables of Railway Excavation and Embankment: Computed according to the Prismoidal Formula, by Edmund Fish, C. E. Published by Edmund Fish & Co., Arcola, Ill.

This work consists of tables which give on inspection the solidity of the prismoidal formula for stations of 100 feet, between level sections of any center height under ten feet. For stations where the center height of one or both of the end sections is over ten feet, a second set of tables is added—constructed on the formula published in the RAILROAD GAZETTE for September 21, 1872—which give the true solidity by taking the sum and difference of the two center heights and adding together the quantities obtained opposite to each. Tables are also given for increasing the center height on account of surface slope. All of these tables are given for road-beds of 12, 14, 18 and 20 feet and slopes of 1½ to 1, and in a supplement tables of correction are added, by which those given can be applied to other road-beds or other slopes.

All the tables are printed in clear and large type and seem to have been prepared with much care, and on light work where the section can be assumed to be level, or where the center and side heights can be averaged without too great error, these will often prove very convenient; but in side-hill work or in deep cuttings, though they can still be used with some saving of labor, it would usually be also with considerable sacrifice of accuracy, and the common method of direct computation would be generally preferred. The radical objection to the use of any tables of this character is that they are apt to be applied to sections taken in irregular ground, where such use involves considerable error; but in suitable localities these tables would be somewhat simple and somewhat more accurate than the similar methods in common use. They can be applied to other road-beds and slopes than those given without much increase of labor, if the character of the work is otherwise well suited for their use, by the methods given in the supplement.

It would probably have been more generally acceptable to have given solidities only to the nearest yard instead of the nearest tenth. Greater accuracy is not justified by the field-work, and the additional figure serves only to confuse the eye and increase the size of the tables.

The Master Mechanics' Association.

The sixth annual Convention of "The American Railway Master Mechanics' Association" assembled in Raine's Hall, Baltimore, at 9 o'clock a. m. on the morning of the 13th, and was called to order by the President, H. M. Britton, of the White Water Valley Railroad.

About one hundred members of the Association were present at the calling of the roll, but there were numerous arrivals during the forenoon.

The officers present were: H. M. Britton, President; N. E. Chapman, of the Cleveland & Pittsburgh Railroad, First Vice-President; and J. H. Setchel, of the Little Miami Railroad, Secretary.

The proceedings were opened with prayer by Rev. J. H. Lightbourn, pastor of the Charles Street M. E. Church.

Proceedings of the last Convention (held at Boston, June 11,

1872) were presented in printed form by the Secretary, and were approved.

ADDITIONS TO THE ROLL.

The following new members signed the constitution and by-laws of the Association:

W. H. Lewis, Morris & Essex Div., Del., Lack. & Western R. R., Hoboken, N. J.; N. Singland, Conn. Western R. R., Hartford, Conn.; C. W. Hollister, Conn. Valley R. R., Hartford, Conn.; Fred. C. Dorsey, Michigan Cen., Jackson, Mich.; C. C. Elliott, C. & N. W. R. R., Clinton, Iowa; Robt. King, Charlotte, Columbia & Augusta R. R., Charlotte, N. C.; T. A. Pervis, M. M. B. & A. R. R., Greenbush, N. Y.; C. H. Brown, D. L. & W. R. R. (Utica Div.), Utica, N. Y.; Jos. Elder, R. R. I. & St. L. R. R., Beardstown, Ill.; Henry Hawkford, M. M. Naugatuck R. R., Bridgeport, Conn.; John F. Crocket, Boston, Lowell & Nashua R. R., Boston; A. Gould, N. Y. C. & H. R. R., Rochester, N. Y.; J. F. Setchel, New York & Oswego Midland R. R., Worthington, N. J.; Peter Clark, Northern Railway of Canada, Toronto; Ezra Osborn, Grant Locomotive Works; J. G. Hubbard, Erie Railway, Buffalo; Wm. H. Ellis, Catawissa Div., Phil. & Reading R. R.

THE PRESIDENT'S ADDRESS.

In accordance with the usual custom the President (Mr. Britton) made a short address. He said:

Gentlemen of the American Railway Convention:

I congratulate you upon our sixth anniversary. I congratulate you that each succeeding year gives new evidences of the prosperity of your Association, for that is a sure guarantee of its great utility. Created by the necessities of a great, increasing and limitless industry, it aims to be worthy of the causes which gave it birth.

The age in which we live, fruitful as it has been in great events, wonderful changes and great accomplishments, is pre-eminently distinguished by the progress which has been made in the mechanical arts.

In many branches of mechanics, however, the wonderful relics of the ingenuity, industry and ability of past ages leave this period nothing of which to boast. The silent Egyptian pyramids and the animated relics of Grecian and Roman art still remain unequalled. But it has been reserved for this age to far surpass all that have preceded it in the great work to which you have devoted your energies and your lives.

No dreamer in the most remote or nearest past ever pictured to the imagination the effect which has been produced by the iron bands which now stretch in every direction over two continents with the machinery moving upon them, of which you in America are the representatives.

Where the progress has been so great more is naturally expected. The great danger to day is that more will be expected of railroad machinery than it can perform. There is a limit beyond which it is not possible to satisfy or economically operate machinery. The present state of public feeling in many parts of the country arises from the fact that producers, both manufacturers and farmers, find that their products cannot be delivered at great distances so as to be sold at a large profit, and is the result of a want of proper general information upon the possibility of moving great bulk considerable distances by the machinery which you represent. It is for us to do our part to enlighten the public on this subject. How can we better accomplish this than to meet in convention once in each year—select subjects, appoint committees to compile reports and then enter into an open discussion of them?

The reports last year were very satisfactory and a credit to the committees who compiled them. The discussions which followed were by far the best we had at our meetings. Let us continue to excel in our reports and discussions.

Great credit is due your Secretary for the manner in which he has performed the duties of his office the past year. He has been untiring in his efforts to promote the welfare of your Association.

Some of the members complain that their superior officers object to their attending our Convention; also, some object to paying their expenses. If such members will furnish their President and Superintendent with our printed report and request that they read our proceedings, I am confident that they will be convinced that it is for their interests that their master mechanics should attend our meetings.

After the adjournment of the last annual meeting, this Association was presented, through its President, with \$3,000 by the committee who entertained us in the city of Boston. Your Supervisory Committee placed the amount on interest subject to the action of the Association. I would request that trustees be appointed to take charge of this money, as per request of the donors.

Gentlemen, the recollection of our former meetings in the West and in the East has for every one something distinctly agreeable of the locality at which they occurred, and I am sure that all of you are glad that to-day we meet in this city of Baltimore. Its localities have great general interest to all of us, quite sufficient to make us rejoice to be here. But, beyond that, our professional interest cannot fail to receive the highest gratification. From Baltimore radiate, north, west and south, some of the most important railroad lines. Her connections are with every part of the country, and keep pace with what is most permanent in railroad enterprise and progress.

Gentlemen, rejoicing to meet every one of you, and wishing you all the pleasure and improvement that this reunion promises, I now invite you to enter upon the business of the Convention.

INCUSTRATION OF BOILERS.

The first paper read was from the Committee on the Operation and Management of Locomotive Boilers, including the Purification of Water, appointed at the Boston Convention, consisting of Messrs. H. A. Towne, Hannibal & St. Joseph Railroad; A. H. De Clercq, Toledo, Peoria & Warsaw, and Harry Elliott, Ohio & Mississippi.

This report was listened to with great interest, and was discussed by the members. A motion was made to continue the Committee until next year, and it was increased by adding to it Mr. Coleman Sellers. The Committee was instructed to appoint one of their members to select a chemist to whom specimens of water could be sent to be analyzed.

A report was from a committee appointed to receive and consider the invitations to the members of the Association. The Association accepted an invitation to visit Annapolis and inspect the engineering department of the Naval Academy on Tuesday afternoon; to visit Druid Hill Park on Wednesday; the Mount Clare shops of the Baltimore & Ohio Railroad on Thursday; go to Washington on Friday, and go to New York on Saturday to accept the hospitalities offered them there. A committee was appointed to arrange the committees and subjects for discussion next year.

The report on the Relative Value of Anthracite and Bituminous Coal and Wood was read. Before the discussion was closed the meeting adjourned.

In the afternoon a large number of the members of the Association, invited guests and ladies took the steamer Theodore Weems to Annapolis. A bountiful collation was furnished by the committee of citizens of Baltimore, and the excursion was in every way agreeable and much enjoyed by all on board.

The attendance is quite as large and the proceedings promise to be of greater interest than at any previous meeting.

—Mr. W. K. Muir, Superintendent of the Great Western Railway of Canada, sails for Europe, to be absent three or four months, during which Mr. M. D. Woodford, Assistant Superintendent, takes his place.

General Railroad News.

ELECTIONS AND APPOINTMENTS.

—Mr. William Harding, late of the Missouri, Iowa & Nebraska Railroad, has been appointed Roadmaster of the Quincy, Missouri & Pacific Railroad, in place of Mr. Collins, resigned.

—Mr. John H. Schermerhorn, Engineer during construction, and Superintendent since, of the Quincy, Missouri & Pacific Railroad, resigned and retired from his position on the 30th of April, and Mr. J. R. Buchanan, who last fall resigned the position of General Freight Agent of the Missouri, Iowa & Nebraska Railroad, has been appointed in his stead. Mr. Schermerhorn has been so fortunate (if that is the proper word) as to have but one accident on his road, and that a trifling one, since it was opened. The employees of the road presented Mr. Schermerhorn with a silver service on his retirement, as evidence of their esteem.

—At the annual meeting of the stockholders of the New Jersey Midland Railroad Company at Jersey City, May 9, the following board of directors was elected: H. Watkins, Delos E. Culver, Jersey City, N. J.; J. W. Hewson, G. A. Hobart, Paterson, N. J.; C. A. Wortendyke, C. Vreeland, J. N. Pronk, Wortendyke, N. J.; H. R. Low, E. P. Wheeler, Middletown, N. Y.; E. C. Alburts, Englewood, N. J.; J. Loomis, Deckertown, N. J.; R. P. Terhune, Hackensack, N. J.; Dewitt C. Littlejohn, Ossego, N. Y.

—At a meeting of the directors of the Panama Railroad Company in New York, Messrs. Edwards Pierpont, C. L. Hotchkiss, L. S. Stockwell and G. G. Haven tendered their resignations, and their places were filled by Messrs. Leonard, Park, Baxter and Pullman. The reconstructed board, of which Mr. A. B. Stockwell remains President, is as follows: W. B. Leonard, New York; T. W. Park, Bonnington, Vt.; H. H. Baxter, New York; George M. Pullman, Chicago; George S. Scad, Alden B. Stockwell, T. B. Musgrave, H. W. Gray, S. J. Herriot, J. M. Burke, A. Masterson, S. L. M. Barlow and F. W. G. Bellows, New York.

—At the annual meeting of the Lake Shore & Michigan Southern Railway Company, at Cleveland, O., May 7, the old board of directors was re-elected, as follows: Horace F. Clark, Augustus Schell, James H. Bunker, Azariah Boddy, New York City; William D. Bishop, Bridgeport, Conn.; William Williams, Buffalo, N. Y.; Charles M. Reed, William L. Scott, John A. Tracy, Erie, Pa.; Stillman Witt, Amasa Stone, Jr., Henry B. Payne, Cleveland, O.; Albert Kepp, Chicago, Ill. At a subsequent meeting of the board the old officers were re-elected, as follows: President, Horace F. Clark; Vice-President, Augustus Schell; Treasurer, James H. Bunker; Auditor, C. P. Lecland.

—At the annual meeting of the Black River & Morristown Railroad Company at Theresa, N. Y., May 6, D. Bearup was unanimously elected President; H. C. King, Vice-President, and A. A. Holmes, Secretary and Treasurer.

—At the annual meeting of the stockholders of the Central Railroad Company of New Jersey in Jersey City, May 9, the old board of directors was re-elected, as follows: John Taylor Johnston, John C. Green, Adam Norrie, Sidney Dillon, J. Boorman Johnston, New York City; Hon. Frederick T. Frelinghuysen, Newark, N. J.; Benjamin Williamson, John Kean, Elizabeth, N. J.; Henry D. Maxwell, Eason, Pa.

—Mr. Charles S. Mellen, of Concord, N. H., has been appointed Paymaster of the Northern Railroad of New Hampshire.

—Mr. C. C. Spring, formerly General Passenger Agent for New England of the Lake Shore & Michigan Southern road, has been appointed to a similar position for the Boston & Maine road.

—The board of directors of the Cincinnati & Great Northern Railroad Company met in Hillsdale, Mich., April 24, and completed the organization of the company by the election of the following officers: John C. McKinney, Dayton, O., President; W. A. Weston, Greenville, S. C., Secretary; A. McCarty, of Pittsburgh, Pa., Treasurer; Executive Committee, J. C. McKinney, W. A. Weston and L. N. Keating.

—At the annual meeting of the Pennsylvania Petroleum Railroad Company at Meadville, Pa., May 5, the following board of directors was elected: Jas. B. Hodgeson, A. H. Steele, L. D. Barton, R. E. O'Brien, Thos. Warnock, J. T. Wann and John S. Dynes. Jas. B. Hodgeson was elected President and Treasurer; A. H. Steele, Vice-President; F. A. Goddard, Auditor; J. T. Blair, Secretary and Superintendent.

—At the annual meeting of the Wheeling, Pittsburgh & Baltimore Railroad Company at Washington, Pa., May 5, C. M. Reed, who was President during the last year, was re-elected to that position, and the following gentlemen were elected directors: C. M. Reed, W. W. Smith, W. Workman, S. B. Hayes, of Washington, Pa.; W. B. Bissell, of Pittsburgh; Col. J. B. Ford, of Wheeling, W. Va., and Wm. Keyser, of Baltimore. The directors met in Pittsburgh, May 6, and elected the following officers: J. B. Washington, Secretary; W. H. Ijams, Treasurer, and James L. Randolph, Chief Engineer.

—Mr. Francis Chase, Superintendent of the Portland Division of the Eastern Railroad, having resigned, the whole line between Boston and Portland will hereafter be under the charge of the Superintendent, Mr. J. Prescott, with office at Boston.

—Mr. Charles P. Johnson, formerly Train Master on the St. Louis & Southeastern Railway, has been appointed Master of Transportation on the Texas & Pacific Railway, with headquarters at Shreveport, La.

—Major H. W. Vandegrift, formerly Superintendent and Chief Engineer of the Orange, Alexandria & Manassas road, is now Assistant Superintendent of the Indianapolis, Cincinnati & Lafayette.

—The corporators of the New Jersey & Delaware Central Railroad Company met at Wilmington, Del., May 5, and organized the company by the election of the following officers: President, B. F. Smith, New York; Vice-President, William Bell, New York; Secretary, S. H. Robbins, Allentown, N. J.; Treasurer, E. Howe, Princeton, N. J.; Chief Engineer, R. S. Van Rensselaer, Bordentown, N. J.; Directors, B. F. Smith, W. Bell, of New York; J. Jamison, of Pennsylvania; S. H. Robbins, J. D. Pancoast, of New Jersey; H. H. Appleton, of New York; Townsend, Samuel Townsend, Henry Cleaver, of Delaware.

—At a meeting of the subscribers to the Delaware & Chesapeake Railroad Company at Odessa, Del., May 8, the company was organized by the election of the following officers: Wm. Polk, Joseph Cleaver, C. Watkins, J. B. Fenimore, L. G. Vandegrift, of Delaware, and S. H. Robbins, Edwin A. Ford, Jos. R. Lippincott and B. F. Smith, of New Jersey; Joseph D. Pancoast, of New Jersey, Treasurer. The board of directors subsequently elected J. B. Fenimore, President; S. H. Robbins, Vice-President; R. S. Van Rensselaer, Chief Engineer, and D. C. Corbit, Secretary.

—At the annual meeting of the Sodus Point & Southern Railroad Company at Newark, N. Y., May 7, the following board of directors was elected: S. K. Williams, E. Blackman and C. G. Pomroy, of Newark, N. Y.; Dr. E. Aldridge, John Arnot, Jr., and Charles J. Longdon, of Elmira, N. Y.; Hon. Ezra Cornell and C. E. Titus, of Ithaca, N. Y.; Charles Pusey, of New York; Henry Cook, of Bath, N. Y.; Robert A. Packard, of Towanda, N. Y.; Gen. J. C. Magee, of Watkins, N. Y., and F. A. Bassler.

—At the annual meeting of the Atlantic & Pacific Telegraph Company at Pittsburgh, Pa., May 6, William G. Johnston, of

Pittsburgh, was elected President, and the following named gentlemen chosen directors for the ensuing year: M. W. Watson, G. W. Haiman, E. Breed and D. McCargo, of Pittsburgh, Pa.; W. M. Tassington, of St. Louis; T. J. Wood, of Dayton, Ohio; A. O. Branner, of Louisville; J. W. Weer, of Harrisburg; A. C. Carnegie and J. W. Ellis, of New York; F. Q. Beisel and J. L. Shaw, of Philadelphia.

—At the annual meeting of the Illinois & St. Louis Bridge Company at St. Louis, May 7, the following board of directors was elected: Girard B. Allen, Barton Bates, John Jackson, Carlos S. Greeley, George Knapp, A. Boddy, William Taussig, John R. Lionberger, James H. Britton, Lewis B. Parsons, Julius S. Walsh, E. W. Woodward, Robert L. Kennedy. The officers of last year, with G. B. Allen as President, were re-elected.

—At the annual meeting of the Seaboard & Roanoke Railroad Company at Portsmouth, Va., May 7, the old officers were re-elected for the ensuing year, as follows: President and General Superintendent, John M. Robinson; directors, Moncure Robinson, Richard Dickson, Thos. Kelso, David A. Barnes, Nulbro Frazier, W. P. Savage; Treasurer, John T. Hill; Auditor, Jos. A. Walton; Superintendent of Transportation, E. G. Ghio; Superintendent of Machinery, J. B. Pendleton; Superintendent of Road and Bridges, Samuel T. Hand.

—Mr. W. P. Peabody, late Master of Transportation, has been appointed Superintendent of the Marietta & Cincinnati Railroad. Mr. W. H. Lancaster, late Assistant Master of Transportation, becomes Master of Transportation. Mr. S. W. Stone has been appointed Master of Road in place of J. P. Williams, resigned.

—Mr. Frank B. Greth, long Train Dispatcher at Lebanon, Pa., on the Philadelphia & Reading road, has been appointed Superintendent of the Chester Valley road. Mr. J. F. Uston, late a conductor on the road, has been appointed Train Dispatcher at Lebanon in place of Mr. Greth.

—The Washington & Chicago Railroad Company was organized at Washington, Ind., May 2, by the election of the following board of directors: E. Hyatt, W. S. Turner, J. J. McLaughlin, J. C. Spink, T. J. Axell, Wm. Tranter, Wm. Helphinstine, S. H. Taylor, J. H. O'Neal. The directors elected James C. Spink President.

—At a meeting of the stockholders of the Louisville, Memphis & New Orleans Railroad Company in Louisville, Ky., May 6, the following board of directors was elected for the ensuing year: B. DuPont, T. K. McCann, L. M. Paine, H. K. Pusey, O. C. Richardson, J. H. W. Frank, G. W. Beard, J. A. Thomas, J. D. Allen, W. George Anderson, A. M. Robinson, J. A. Chick, Ben. Wathen, W. J. Robertson and J. P. Barrett.

—At the annual meeting of the Indiana & Illinois Central Railroad Company, at Indianapolis, May 7, the following directors were elected: Henry B. Hammond, Sidney Dillon, Chauncey Vibbard, Charles Dana, William H. Guion, New York; H. C. Moon, St. Louis; Benj. E. Bates, Boston; Henry Lewis, Philadelphia; George M. Pullman, Chicago; A. L. Roache, Indianapolis; E. M. Benson, Montezuma, Ind.; Thos. H. McCaughtry, Tuscola, Ill., and John H. Warren, Decatur, Ill. Mr. Hammond was re-elected President.

—At a meeting of the stockholders of the Straitsville & Hocking Valley Railroad Company, held at Logan, O., May 6, the following gentlemen were elected directors: W. C. Quincy, J. L. Kirby, Lewis Evans, Eli Hull, W. S. Woolson, Waldo Taylor, H. M. Wyeth, Isaac B. Iltley and W. C. Lee. The board was organized by electing J. L. Kirby, President; H. M. Wyeth, Treasurer, and Waldo Taylor, Secretary.

—Mr. P. B. Ruffin, of Hillsboro, N. C., has been appointed Treasurer of the North Carolina Railroad Company.

—Mr. Henry R. Low, of Middletown, N. Y., has been re-elected Treasurer of the New Jersey Midland Railroad Company, which position he resigned last spring, owing to ill-health.

—At the annual meeting of the stockholders of the Delaware & Hudson Canal Company in New York, May 13, the following board of managers was elected: Charles N. Talbot, Abiel A. Low, Robert Lenox Kennedy, James M. Halsted, Legrand B. Cannon, James R. Taylor, John Jacob Astor, W. J. Hopper, J. Pierpont Morgan, George Cabot Ward, Robert M. Oliphant, New York city; Thomas Cornell, Rondout, N. Y.; Thomas Dickson, Scranton, Pa.; Messrs. Morgan, Ward and Oliphant are new members of the board, taking the places of G. T. Oliphant (deceased), Edward J. Woolsey and Isaac H. Seymour.

—At the election for officers of the New York Stock Exchange, held May 13, the following officers were chosen: President, H. G. Chapman; Chairman, M. G. Wheelock; Vice-Chairman, James Mitchell; Secretary, B. O. White; Treasurer, D. C. Hays; members of the Governing Committee, to serve four years: Edward King, John R. Garland, Alfred Colvill, Edward Brandon, G. H. Watson, George W. McLean, Jacob Hays, 2d, Donald Mackay, John T. Denny and Brayton Ives; to serve two years: R. K. Cooke, D. B. Hatch; to serve one year: Theodore S. Ferry.

—Mr. J. T. Hayden, late Agent of the Lake Shore & Michigan Southern Railway at Kalamazoo, Mich., has been appointed Traveling Auditor of the road, with headquarters at Cleveland, Ohio.

—Mr. William A. Haven, late Division Engineer of the New York Central & Hudson River road, having charge of the two new tracks from Syracuse to Buffalo, has resigned that position to accept the appointment of Chief Engineer of the Wisconsin Central. Mr. A. Grant Childs has been appointed successor to Mr. Haven on the New York Central & Hudson River.

—At the annual meeting of the Indianapolis & Vincennes Railroad Company in Indianapolis, Ind., May 8, the old board of directors was re-elected, as follows: Thomas A. Scott, G. B. Roberts, Philadelphia, Pa.; William Thaw, T. D. Messler, W. P. Shinn, Pittsburgh, Pa.; D. S. Gray, Columbus, O.

—The stockholders of the East St. Louis & Carondelet Railroad Company have elected the following board of directors: J. W. Conlogue, J. B. Bowman, J. B. Lovington, Joseph Ogle, Thomas Winstanley, A. B. Pope and John Trendley. The directors organized by the choice of the following officers: J. W. Conlogue, President; J. B. Bowman, Secretary; and W. C. Hewitt, Treasurer.

—At the annual meeting of the Vermillion Valley & Northern Pacific Railroad Company, in Vermillion, Dakota, recently, C. H. True, J. L. Fisher, V. E. Prentiss, E. McDermer, M. D. Thompson, H. Newton and P. H. Turner were chosen directors. The board of directors elected C. H. True, President; M. D. Thompson, Vice-President; F. McDermer, Secretary; V. E. Prentiss, Treasurer; H. J. Austin, Chief Engineer; J. W. Turner, General Superintendent.

—The new board of directors of the Sodus Point & Southern Railroad Company has elected Stephen K. Williams, President; John Arnot, Jr., Treasurer, and F. A. Bassler, Secretary and Superintendent.

—At a meeting of the stockholders of the Lawrence & Southwestern Railroad Company in Lawrence, Kan., recently, the following board of directors was elected: James Blood, O. E. Leonard, J. W. Maximilian, J. P. Devencaux, W. Hadley, C. F. Garrett, Joel Grover, O. T. Taylor. The directors subsequently chose officers follows: J. P. Usher, President; J. M. Webster, Vice-President; O. E. Leonard, Secretary.

—At the annual meeting of the Illinois, Missouri & Texas Railroad Company, at Cape Girardeau, Mo., May 2, the following directors were elected: Eli J. Crandall, Benjamin R. Bonner, Clinton B. Fisk, Jeremiah D. Slocum, Alvinian V. Bohn,

Charles M. Randall and William W. Mann, re-elected, and Harry Lander and Thomas D. Price newly elected.

PERSONAL.

—Mr. Leverett Brown, whose sudden death of pneumonia, in Indiana on the 27th ultimo, was briefly noticed in these columns last week, had been engaged in railroad contracts in Illinois and Indiana for about four years. In 1869 he graded three of the heaviest sections of the St. Louis, Vandalia & Terre Haute Railroad, and in this, his first contract, made a reputation for faithfully executing his engagements to both his employers and his employees, which always afterward made him respected and trusted. In 1870 and 1871 he constructed wholly the Gilman, Clinton & Springfield Railroad, in Illinois, including grading, bridging, placing ties and track-laying. In 1871 also he graded parts of the Indiana Division of the Cincinnati, Lafayette & Chicago, the Paris & Danville and the Decatur & State Line (now Chicago, Decatur & St. Louis) roads. In 1872 he was engaged in the construction of the Danville, Tuscola & Western and the Danville & Paxton railroads, both of which were left unfinished at the time of his death. Mr. Brown's presence and manner were singularly attractive and well calculated to gain confidence, which his scrupulously honorable dealing confirmed. This, doubtless, was the secret of his success with workmen, often extremely difficult to manage, who could not fail to see that Mr. Brown not only intended to treat them fairly and pay them their wages, but really had a warm heart toward them and was anxious for their comfort and welfare.

TRAFFIC AND EARNINGS.

—The following is the official report of the Traffic Department of the Union Pacific Railroad for the month of March :

	1873.	1872.	Increase.	Decrease.	P. c.
Earnings....	\$708,259 53	\$565,861 44	\$142,398 09	.....	25%
Expenses....	334,804 10	365,668 67	.....	\$35,868 57	9%
Net earnings....	\$374,459 43	\$199,192 77	\$178,266 66	.....	89%

For the three months ending March 31 the report is as follows :

	1873.	1872.	Increase.	Decrease.	P. c.
Earnings....	\$1,724,179 94	\$1,373,913 61	\$350,105 33	.....	25%
Expenses....	971,395 72	1,138,764 48	.....	\$167,368 76	14%

Net earnings.... \$752,622 22 \$235,148 13 \$517,474 09 230

For the month of March the gross earnings are at the rate of \$673 per mile; for the three months at the rate of \$1,661 per mile, against \$1,324 per mile in 1872, showing an increase of \$337 per mile, or 25½ per cent.

—The earnings of the Erie Railway for the six months from November 1 to April 30 were: 1872-3, \$8,800,532; 1871-2, \$8,519,239; increase, \$281,343, or 3 5-16 per cent.

—The earnings of the St. Louis & Iron Mountain Railroad for the third week in April were: 1873, \$53,320; 1872, \$45,985; increase, \$7,335, or 16 per cent.

—The earnings of the Central Pacific Railroad for the month of April were: 1873, \$1,132,920; 1872, \$49,598; 1871, \$720,929; increase 1873 over 1872, \$183,322, or 19½ per cent.; increase 1873 over 1871, \$411,991, or 57½ per cent.

For the four months ending April 30 the earnings were: 1873, \$3,654,255; 1872, \$2,939,421; 1871, \$2,357,365; increase 1873 over 1872, \$664,834, or 22½ per cent.; increase 1873 over 1871, \$1,296,890, or 55 per cent.

—The earnings of the Grand Trunk Railway of Canada for the week ending April 19 were: 1873, £41,400; 1872, £38,200; increase, £3,200, or 8½ per cent.

—The earnings of the Great Western Railway of Canada for the week ending April 18 were: 1873, £24,130; 1872, £24,739; decrease, £609, or 2½ per cent.

—The following companies have thus far published their earnings for April :

	1873.	1872.	Increase.	Dec.	P. c.
Atlantic & Pacific....	\$105,353	\$87,543	\$17,809	.....	10%
Atlantic & G. West....	343,845	393,244	41,611	.....	20%
Bur., Ced. R. & Minn....	7,357	64,551	12,808	.....	19½%
Central P. & C.	1,132,920	949,598	183,322	.....	19½%
Chicago & Alton....	412,218	374,878	37,340	.....	10
Chicago & Northw.	99,816	90,375	9,441	.....	10
Cle., Col. Cin. & Ind.	42,928	381,113	51,815	.....	13½%
Col. & Hocking Val....	93,133	65,200	26,98	.....	40%
Erie....	1,511,158	1,527,993	13,965	.....	0½%
Illinois Central....	544,035	539,871	.....	15,836	2½%
Ind., B. & W.	124,054	114,851	9,208	.....	8
Lake Sh. & Mich. S.	1,694,513	1,518,250	166,293	.....	30%
Marietta & Cincinnati....	190,563	145,855	41,701	.....	30%
Milwaukee & St. Paul....	569,236	474,188	95,048	.....	20½%
Mo., Kans. & Texas....	241,703	117,542	144,158	.....	122½%
Ohio & Mississ. p. & p.	333,236	271,920	59,316	.....	21½%
Pacific of Missouri....	320,991	255,160	25,831	.....	8½%
St. L., Alton & T. H., main line....	113,632	115,517	.....	1,885	1½%
St. L., Kan. C. & N.	231,836	230,109	1,777	.....	0½%
Tol., Wab. & West....	416,527	447,813	786	.....	0½%

CHICAGO RAILROAD NEWS.

Chicago & Alton.

This company has commenced the construction of a first-class railroad bridge at Louisiana, on the Mississippi River. The total length, including the approaches, will be about one mile. It will rest upon massive stone piers built upon piles, the piers to be constructed by the use of caissons in the usual manner. It will have ten spans. The central one, which comprises the draw, will be 442 feet in length, and will, it is said, be the longest bridge span in the world. Another span will be 225 feet in length. The work for the construction of the piers has already been let, and the superstructure will shortly be also put under contract. It is designed to have the bridge ready for use by the first day of December. It will cost about a million dollars.

Chicago & Northwestern.

This company has issued a circular offering excursion tickets from Chicago to Lake Superior, and on that lake between Marquette and Duluth, and back to Chicago, for \$35 for the round trip. One of the advantages of these trips is that the traveler is not obliged to pass over the same region of country twice, and he has a choice of four routes which are, in important respects, entirely different from each other. The company is at work upon the round-house west of the city with a considerable force of men.

Chicago, Danville & Vincennes.

This company hauls into the city at the present time forty loads of coal per day, and the demand for the coal is constantly and rapidly increasing. The business of shipping corn and pork south is also becoming decidedly large.

Chicago & Pacific.

This company is now running trains to Roselle, a distance of 24 miles, one train a day each way. Between the city and River Park, two trains per day are run. The present equipment of the road consists of 4 engines, 2 passenger coaches, 2 baggage cars, 3 caboose cars and about 60 freight cars, and large additions to these will be made and have already been ordered. The

passenger cars are all provided with the Miller platform and coupler, and are very fine specimens of workmanship throughout. The depot is situated at the foot of Halsted street and the North Branch of the Chicago River, and is somewhat remote from the central portion of the city. The company, however, until they get the right of way to a more central point, have made an arrangement for the running of omnibuses between the terminus and the business portion of the city.

The Depot Concert.

The men who have the matter in charge are preparing a monster concert to take place in the new passenger depot. It is to be a grand affair, and is expected to eclipse most concerts of its kind. There is talk of supplementing the powers of Gilmore with a concert of several thousand school children during the week. The building is large enough to accommodate about twenty thousand people.

Milwaukee & St. Paul.

The freight and ticket offices of this company have been removed to Nos. 61 and 63 Clark street, opposite the Sherman House.

Pittsburgh, Fort Wayne & Chicago.

The ticket office of this company has been removed to the northeast corner of Clark and Randolph streets, in the same locality as that which the company occupied before the great fire. The company is constructing station-houses in Milwaukee, to be placed upon the line of the road between Milwaukee & Chicago.

Chicago, Burlington & Quincy.

The city offices of this company have been located at No. 69 Clark street, opposite the Sherman House.

Illinois Railroad Law.

The Illinois Central, the Chicago, Burlington & Quincy, the Chicago & Alton, and the Chicago & Northwestern railroad companies are preparing a schedule of freight rates to comply with the State law, which goes into effect on the first day of July. The rates will be in proportion to distance, and the effort will be made to do away entirely with favorably discriminating rates at competing points. There is, in fact, a very strong desire on the part of railroad officials in this city to comply with the law as far as possible.

ANNUAL REPORTS.

Illinois & St. Louis Bridge.

At the annual meeting of this company in St. Louis May 7 a report was made by the President of the company. No report was made by the Chief Engineer, his report being deferred till the completion of the bridge.

The work on the bridge has been much delayed by the difficulty of obtaining material for the couplings. It has finally been decided to use wrought iron instead of steel for the couplings for the upper members of the arch.

The contract for the east approach has been awarded to the Baltimore Bridge Company and is to be an iron trestle work. Work on the west approach has been resumed and is being vigorously prosecuted.

The receipts of the company from its organization have been as follows :

Payments on stock subscriptions.....	\$3,205,220 00
Sale of first mortgage bonds.....	3,671,134 39
Total.....	\$6,876,354 39
Expenses for masonry, superstructure, engineering, boats, etc.....	\$3,170,982 93
Approaches and real estate.....	655,204 31
Interest.....	986,831 37
Charter account.....	190,582 05
Total.....	\$7,043,603 69
Deficiency.....	\$167,246 30

The sum required to complete the bridge and make the necessary interest payments is about \$860,000. This is proposed to be raised by the sale of \$1,050,000 second-mortgage bonds.

OLD AND NEW ROADS.

Lehigh Coal & Navigation Company.

Negotiations are in progress for the lease of the property of this company to the Central Railroad Company of New Jersey, which already leases the railroad (Lehigh & Susquehanna) belonging to it. The company owns the Lehigh Canal from Easton, Pa., to Coalport, 48 miles, and leases the Delaware Division Canal, 60 miles long, from Easton to Bristol. The company also owns a large amount of coal property, and it is probably the control of this coal property which the Central Company chiefly desires.

Northwestern Association of General Freight Agents.

The annual meeting of this Association was held in Milwaukee, May 7. No business of general interest was transacted. The place for the next meeting is Toledo, O.

Texas & Pacific.

Track has been laid for 10 miles west of Longview, Tex., and the contractors are said to be averaging a mile of track per day. Track-laying is to be commenced at Jefferson as soon as a sufficient stock of iron is received there. The work of laying the track eastward from Dallas is progressing rapidly.

The bill extending the time for the completion of the road to Fort Worth has passed the lower House of the Texas Legislature. The bill provides that the roads must be completed to Sherman and Dallas this year, and that the company shall receive a land grant in place of a subsidy in State bonds.

Mobile & Northwestern.

The City Council of Mobile has refused to adopt the report of its committee recommending the repudiation of the bonds issued in aid of this road. A resolution was adopted requesting the Mayor to call upon the trustees, who hold the \$700,000 in bonds in trust, to be issued hereafter, to return them to the city. It is not thought that the request will be complied with. The interest on the \$300,000 already issued is to be paid, a tax having been levied for that purpose.

Detroit & Bay City.

The road is to be opened for business to Vassar, Mich., May 19. The track has been completed to Bay City some weeks, but the ballasting has been delayed by wet weather.

National.

It is reported that this company has obtained funds for the completion of its road, and that work will at once be resumed on the road through New Jersey.

Regulating Freight Rates in Delaware.

Mr. Hinckley, President of the Philadelphia, Wilmington & Baltimore Company, has written a letter to the Secretary of State of Delaware on the operation of the law regulating rates passed by the late Legislature of that State. The law provides that the rate per ton, or per passenger, per mile must be the same for shorter as for longer distances. After giving a number of instances showing the impracticability of enforcing the law, Mr. Hinckley says, in conclusion :

"The law seems based upon the impracticable theory that a wholesale dealer shall charge exactly the same price for his commodities as the retail dealer does, and inasmuch as the

latter cannot be forced to lower his prices, the former is required to raise his, regardless of the consequences to the customer or to the dealer.

"I should be exceedingly gratified if the gentlemen who framed the law referred to, or any of the gentlemen who voted for it, will explain how the law, if enforced, could fail to produce the most disastrous effects upon the business of the State."

It is said that steps are being taken to test the constitutionality of the law.

Cleveland, Mount Vernon & Delaware.

The last bridge on the line, that over Alum Creek, 10 miles northeast of Columbus, O., has been completed, and track-laying is progressing well. It is thought that the construction trains will reach Columbus about May 20.

Burlington, Cedar Rapids & Minnesota.

The town of Independence, Ia., has voted \$20,000 in aid of the Milwaukee Branch.

Illinois, Missouri & Texas.

The grading on this road (formerly the Cape Girardeau & State Line) is completed for 42 miles west of Cape Girardeau, Mo., and the balance of the grading is nearly finished to Poplar Bluffs, on the Arkansas Branch of the St. Louis & Iron Mountain road, a distance of 63 miles from Cape Girardeau. Track-laying has been commenced. Surveys for the line west of Poplar Bluffs are being made. It is intended to build the line southwest as far as Fort Smith, Ark.

Milwaukee, Lake Shore & Western.

The injunction restraining the town of Ozaukee, Wis., from issuing \$30,000 in bonds voted in aid of this road has been dissolved.

Contracts.

The Fourth Avenue Improvement Commissioners (office at the Grand Central Depot, New York,) will receive proposals until 3 p. m. May 20, for construction of new sewers on Fourth avenue and intersecting streets between Forty-ninth street and Harlem River, at points where the improvement will make the present sewers useless.

Lieut.-Col. John Newton, of the United States Engineers, will receive proposals at his office, corner of Houston and Greene streets, New York, until noon on June 14, for dredging the bar in the Passaic River at Rutherford Park, N. J.

Lieut.-Col. J. D. Kurtz, of the United States Engineers, will receive proposals at his office, No. 1,328 Chestnut street, Philadelphia, until noon of June 11, for dredging from the bar in the Delaware River near Fort Mifflin 140,000 cubic yards or more of sand and gravel.

Captain D. W. Flagler, commanding the Rock Island Arsenal, Ill., will receive proposals at the arsenal about 3,240 lineal feet of heavy 15 in. wrought iron I beams, weighing about 200 pounds per yard, in lengths from 15 to 22 feet, and generally of 19 feet; also for about 7,400 lineal feet of heavy 12 in. wrought-iron I beams, weighing about 125 pounds per yard, in length between 11 and 20 feet, and generally 16 and 20 feet.

Mr. C. Chanute, Chief Engineer of the Erie Railway, will receive proposals for constructing the road-bed for a second track on three sections of the road, amounting in the aggregate to 42 miles, described elsewhere.

Hannibal & Moberly.

A proposition to transfer \$200,000 of stock in this road to the Missouri, Kansas & Texas was voted on in Monroe City, Mo., May 12, and carried by a large majority.

Berks County.

The Court of Common Pleas of Berks County, Pa., has decided that the Berks County Railroad Company has the right to cross the track of the Philadelphia & Reading road and lay a track on Front and Canal streets in Reading, and has denied the application for an injunction. The question, however, of building side tracks from the Berks County main track across the Philadelphia & Reading track is left undetermined. No obstacle now remains to prevent a connection being made between the Berks County

the Connecticut at Middletown, which is 1,260 feet long, cost nearly \$500,000. It is said that about \$300,000 is still required to complete the ballasting of the road, build station houses, etc., and provide the necessary equipment.

Chicago, Dubuque & Minnesota.

It is said that work will soon be commenced on the extension of the Turkey River Branch from its present terminus at Elkport, Ia., westward. Nearly all the grading for the line was done last year for some 40 miles west of Elkport.

International & Great Northern.

The track on the Great Northern is completed to Lyndale, 15 miles north of Tyler. Track-laying is going on rapidly toward the Sabine River, and it is expected that the junction with the Texas & Pacific will be reached by June 1.

Atlantic & Gulf.

The board of directors has resolved to commence work on the extension from Bainbridge, Ga., to Pollard, Ala., notwithstanding the failure of the company to obtain aid from the State. The surveys for the extension, which will be about 165 miles long, have been commenced. At Pollard connection will be made with the Mobile & Montgomery and the Pensacola & Louisville roads.

Kansas Central.

Efforts are being made to secure funds for the extension of this road westward from its present terminus at Holton, Kan. Jefferson township has voted \$10,000 in aid of the road.

Texas Railroad Projects.

The following railroad projects are now before the Legislature of Texas:

The Fort Worth, Cleburne & Waco Company wishes a charter to build a railroad from Fort Worth south through Cleburne to Waco, a distance of about 80 miles. The capital stock is not to exceed \$12,000,000, and the bill proposes to give 16 sections of land per mile. The company must complete ten miles by January 1, 1875, and the whole road by January 1, 1877.

The San Antonio & Austin Company asks a charter and 16 sections of land per mile. The road is to extend from San Antonio northeast to the Colorado River opposite Austin, 75 miles, and by the terms of the bill the road must be begun within three years and completed in one year after commencement. The capital stock is \$3,000,000, with privilege of increase to \$5,000,000.

The Gulf, Colorado & Santa Fe Company asks for a charter to build a road from Galveston northwest through Caldwell, Cameron and Belton, crossing the Texas & Pacific in Eastland County, and thence by the most practicable route to Santa Fe, New Mexico. The company to complete 30 miles in two years and 30 miles annually thereafter, and to receive 16 sections of land per mile. Capital stock \$2,000,000, with privilege to increase to \$7,000,000. The total length of this line would be about 850 miles, of which 650 would be in Texas.

The St. Louis & Mexican Gulf Company asks for a charter and 16 sections of land per mile for a road from Sabine Pass northwest through Beaumont, Woodville, Henderson and Paris to Red River and thence through the Indian Territory to a connection with the Atlantic & Pacific. Work is to be commenced by September, 1873, and 50 miles of road built each year thereafter. The capital stock to be \$2,000,000. This company would have 320 miles of road in Texas.

New River.

This company, chartered last year by the Virginia Legislature, purposes building a railroad from Central Depot, 96 miles west of Lynchburg on the Atlantic, Mississippi & Ohio, north down the valley of New River to the West Virginia line. From this point the road is to be continued by a West Virginia company to the Chesapeake & Ohio at the mouth of Greenbrier River. The whole distance from Central Depot to the mouth of Greenbrier is about 55 miles.

Meetings.

The annual meeting of the Illinois Central Railroad Company for the election of directors will be held in Chicago May 28.

The annual meeting of the Milwaukee & St. Paul Railway Company will be held in Milwaukee, Wis., June 7.

The annual meeting of the New York & Harlem Railroad Company will be held in New York May 20.

St. Joseph Bridge.

The last span of the railroad and wagon-road bridge over the Missouri River at St. Joseph, Mo., was swung May 5. This span is 300 feet long, and the iron was transferred from the east bank of the river (500 feet) and raised and the span swung in place in less than 40 working hours. The only work remaining to be done is the laying of the floor and track, which, it is expected, will be completed by May 20. The bridge, which is of the Pratt quadrangular truss pattern, was built by the Detroit Bridge & Iron Works, contractors. Colonel E. D. Mason is the Chief Engineer of the bridge company.

Railroad Legislation in Michigan.

Among the laws enacted at the late session of the Michigan Legislature were acts requiring companies to put train-brakes on all passenger trains; to establish gates and keep watchmen at those street crossings in cities and villages where the Railroad Commissioners shall think it necessary to be done; to provide for the taxation of railroad lands, and to impose a tax of three per cent. on the gross receipts of all palace and sleeping-car companies. A number of amendments were made to the general railroad law. The bill regulating rates of freight failed to pass.

California & Oregon.

It is said that the Central Pacific Company intends to extend this road about 40 miles northward from the present terminus at Redding this season. The road has been located some distance above Redding.

Varna, Peru, Mendota & State Line.

The stockholders of this company, which intends to build a railroad from Varna, Ill., on the Western Division of the Chicago & Alton, north through Peru and Mendota to the Wisconsin line, have voted to consolidate with the Milwaukee & Northern Illinois, a company whose projected line extends from Milwaukee southwest to the Illinois State line.

Michigan Air Line.

A correspondent of the Detroit (Mich.) Tribune, writing from Marshall, Mich., says:

"Another step in the Air Line warfare has been taken. Recently on complaint of Rufus Osborn, H. F. Evers, M. A. Morrisfield, and Joseph Smith, of Tekonsha, in this county, an injunction has been issued directed to the Michigan Air Line Company, and the directors thereof, to the Farmers' Loan and Trust Company, of New York, and to James F. Joy, and the Michigan Central Railroad Company, directing them as follows:

"The said directors are commanded to desist and refrain from ratifying, confirming, or in any manner assenting to two certain pretended leases purporting to have been executed by Jerome B. Eaton, President, and O. W. Bennett, Secretary of the said Michigan Air Line Railroad Company, the one of that portion of the railroad of the Michigan Air Line Railroad Company between Jackson and Niles, and bearing date about the 1st day of January, 1870; the other lease, of that portion of the said railroad between Niles and South Bend, bearing date about the 10th of October, 1870; and also from ratifying or confirming two

certain deeds of trust purporting to have been executed by the said Eaton, President, and Bennett, Secretary; and from making any other lease, grant, conveyance or assignment of the railroad of the Michigan Air Line Railroad to the Michigan Central Railroad Company, or any corporation, or from making or executing any mortgage or other instrument to encumber, alienate or dispose of any property of the said Michigan Air Line Railroad Company.

"The Farmers' Loan and Trust Company is enjoined from assigning or selling a certain trust deed recorded in the Calhoun County Register's office on the 25th day of May, 1870.

"James F. Joy and the Michigan Central Railroad Company are enjoined from disposing of a certain trust deed, recorded February 25, 1870, and from selling or disposing of any of the Michigan Air Line Railroad bonds accompanying said deed."

Ashtabula, Youngstown & Pittsburgh.

The difficulty with the Liberty & Vienna Company has been adjusted and regular trains are now running over the road. The work on the extension from Ashtabula, O., to the harbor is being pushed forward and, it is expected, will be completed by June 1.

Allegheny Valley—Eastern Extension.

Trains have begun to run on the Eastern Extension (the "Low-grade" line) from Red Bank, Pa. (the junction with the main line) to New Bethlehem, a distance of 21 miles.

Fredericksburg, Orange & Charlottesville.

The Norfolk (Va.) Journal says:

"The road belonging to this company was to have been forfeited May 10, and to revert to the original Fredericksburg & Gordonsville Railroad Company (which is composed of the State of Virginia, the corporation of Fredericksburg and individual stockholders resident in that vicinity), unless the owners should deposit \$20,000 of Virginia consolidated bonds before that day with Col. Mayo, the State Treasurer, to be used in the payment of certain debts. At last accounts it was thought that the stockholders, who are residents of the North, would pay the debts and complete the road. Unless it is completed by the 1st of August next, it still reverts to the parties mentioned above."

The road extends from Fredericksburg, Va., west to the Orange & Alexandria near Orange Court House, and about half of it is completed and some grading has been done on the remainder.

The company complied with the law and deposited the required \$20,000 in bonds with the Board of Public Works May 10.

Missouri, Kansas & Texas.

The contract for the first ten-mile section of the extension from Denison, Tex., southward is to be let as soon as the engineers can complete the location.

Central Vermont.

The subscriptions to the stock of this company were as follows:

Shares	Value
George M. Rice, Worcester, Mass.	500
T. H. Perkins, Boston	250
J. G. Abbott, Boston	250
J. H. Kimball, Bath, Me.	220
B. P. Cheney, Boston	250
J. B. Price, Rutland, Vt.	250
W. C. Smith, St. Albans, Vt.	250
Otis Drury, Boston	200
Joseph Clark, Milton, Vt.	200
John Gregory Smith, St. Albans, Vt.	250
J. R. Langdon, Montpelier, Vt.	250
K. S. Chaffee, Boston	50
A. O. Brainard, St. Albans, Vt.	50
E. A. Smith, St. Albans, Vt.	25
Lawrence Barnes, Burlington, Vt.	150
Estes Howe, Cambridge	200
C. C. Coffin, Boston	50
L. Underwood, Burlington, Vt.	100
F. A. Brooks, Boston (bonds)	127

Total Vermont and Boston interest..... 3,727

William J. Emmets, New York	10
James B. Hodgkin, "	10
Harry Blood, "	10
A. A. Selover, "	1,000
George H. Brown, "	3,000
Andrew McKinney, "	1,000
J. Q. Hoyt, "	1,500
C. Meyer, "	2,0
W. Butler Duncan, "	3,000
C. L. Lincoln, North Bennington	100
C. E. Houghton, "	25
J. G. McCullough, "	100
T. W. Par, "	5,445
M. S. Colburn, Manchester	100

Total New York interest..... 16,300

The "Vermont and Boston interest" is similar to the old Vermont Central management, and the "New York" interest is identical, or nearly so, with the new New York, Boston & Montreal Company. It is supposed that the Vermont Central and its leased lines, after reorganization in the Central Vermont, will be leased to or worked in the interest of the New York, Boston & Montreal, which latter will then be formed chiefly of roads which have been bankrupt or unable to meet their debts. The construction of a small amount of new road (about 60 miles, we believe) will give it an unbroken line from the Harlem River to Montreal, for about 150 miles nearly parallel with the Hudson River and Harlem roads, but avoiding nearly all the considerable towns west of the Hudson. With an entrance into New York completed, however, it would command the only existing direct route between New York and Montreal (a route on which there is a fair passenger and a light freight traffic), until some new roads projected and partly under construction shall have given the Hudson River road a new connection northward.

Erie.

Mr. O. Chanute, the Chief Engineer, advertises for proposals for the grading and masonry for the second track, in sections, as follows:

Lackawaxen (110 miles from New York and junction of Honesdale Branch) westward 11½ miles to Narrowsburg. Narrowsburg (20½ miles west of Narrowsburg) west to Hancock, 10½ miles.

Lancaster (10½ miles east of Buffalo) east to Attica, 20 miles. This is a total of 42 miles. It will be divided in mile sections, and bids will be received for one or more sections. Blanks for proposals may be had of Mr. G. Fay, Engineer in Charge, Narrowsburg, and Mr. A. R. Trew, Engineer in Charge, Buffalo. Work is to be completed within 90 days, and contractors who do their work promptly and well are promised the preference in future lettings, which are expected to cover about 75 miles more this season.

Omaha & Council Bluffs Bridge.

The Government having the right to retain one-half of the tolls on all its traffic going over the Union Pacific Railroad, the question arose whether this right extended to the bridge between Council Bluffs and Omaha, for which separate charges are made. This being submitted to the Attorney-General, he says that the act of 1862, incorporating the company, and the mandatory act of 1864 are to be taken together as one act, and as they provide that one-half of all compensation for services rendered by the railroad company to the government shall be retained from the payment of its bonds and interest, without naming any specific services, and as said acts grant railroad,

telegraph and bridge franchises, he holds that the provisions as to compensation apply as well to services under the one as under the other of these franchises. He also says that under the act of 1873 all compensation for services to the Government by said company upon its railroad of any kind is to be retained so long as any interest is due to the United States by the company upon its bonds which remains unpaid, and that the railroad of the company across the bridge is one of the railroads to which said act applies. The Attorney-General prefaches his decision with the statement that the determination of this question does not involve the inquiry as to the terminus of the Union Pacific Railroad, and therefore there is no decision upon that subject.

Chicago, Millington & Western.

The preliminary survey for this proposed "narrow-gauge railroad has been completed from Chicago west by south to Princeton, Ill., and the engineer's party has been disbanded. The route is a little north of the Chicago, Burlington & Quincy to Aurora, thence down the west bank of Fox River to Millington, for the most part very near the Fox River Valley Branch of the Burlington road, and thence westward to Princeton. For the entire distance it is near the Chicago, Burlington & Quincy.

Popular Stock Subscriptions.

A correspondent who was engaged in the surveys of a proposed new railroad in Illinois writes as to the popularity of new railroad schemes there: "The company depends on subscriptions to stock among the people, and if I may judge from what I heard, the people—that is, five out of six—don't care for any more roads, and nine out of ten wouldn't have any stock anyway, and about nineteen out of twenty haven't any money to spare now if they did want the road."

Georgetown & Rehoboth.

This road is to extend from Harrington, Del., southeast to Lewes, near the Delaware Breakwater, a distance of 25 miles, and will form an extension of the proposed Baltimore, Chesapeake & Delaware Bay road from Harrington to Delaware Bay, at the Breakwater.

Smyrna & Delaware Bay.

Work has been commenced on this road, which is to extend from the Delaware at Bombay Hook west to Massey's, the junction of the Kent County and Queen Anne's & Kent roads. The road is being built in the interest of the New Jersey Southern.

Lake Erie & Louisville.

A large force is at work between St. Mary's, O., and Union City, Ind., on the grading. Track-laying has commenced between Lima, O., and St. Mary's. The company intends to have the road completed this season to Cambridge City, Ind., about 90 miles beyond Lima, the present terminus.

Rochester & State Line.

The grading is almost completed to Great Valley, N. Y., on the Erie, 49 miles east of Dunkirk, and about 90 miles southwest of Rochester. It is said that the iron has been purchased and that track-laying will soon be commenced. The track-layers will begin at Machias and work both ways from that point.

Connecticut & Passumpsic Rivers.

The third rail on the Grand Trunk road from Lenoxville, Can., to Sherbrooke is being taken up, and it is understood that trains on the Connecticut and Passumpsic Rivers road will hereafter run only to Lenoxville. Lenoxville is the proper terminus of the road, but trains have been run to Sherbrooke, three miles further, over the Grand Trunk track, a third rail being laid for that purpose.

Western Maryland.

Work on the new line from Brooklandville to Baltimore is being pushed forward, and it is expected that the line will be completed by July 1. The line is about 10 miles long. Trains have heretofore been run over the Northern Central track into Baltimore.

Corinne & Helena.

It is proposed to connect Montana with the Central Pacific by a narrow-gauge railroad from Helena, in that Territory, to Corinne, Utah, and the Legislature of the Territory is to be asked to vote the project a subsidy of \$2,000,000 in bonds, secured upon the real property of the several counties in proportion to their valuation. The governor has called an extra session of the Legislature, but there is a strong opposition to the subsidy from the counties west of the Rocky Mountains, which will be little, if at all, benefited by the road.

Jacksonville & St. Augustine.

The Jacksonville (Fla.) Union says: "We learn that a majority of the stock of the Jacksonville & St. Augustine Railroad has been purchased by F. A. Dockray, Esq., under a contract for the building of the road on or before May 1, 1874. This action virtually transfers the ownership of the road to Mr. Dockray on his filing bond in the sum of \$50,000. We suppose that it is the intention to form a construction company to build the road, and then turn it over completely equipped to the railroad company, which is the substance of the contract, but the purchase of a majority of the stock puts the whole thing in the hands of the construction company, who really become the owners and proprietors of the road. They are then enabled to build the road with the stock alone, or by an issue of bonds which are authorized by the contract to the amount of \$16,000 per mile."

It has been decided to make the road of 4 feet 8½ inches gauge, instead of three feet, as at first intended. The bond referred to must be filed within 60 days, or the contract becomes void.

Springfield & Longmeadow.

This company has made a new proposition to the city of Springfield, Mass. It is proposed that the city subscribe \$125,000 to the stock (the whole amount of stock is \$150,000), on condition that private individuals take the remaining \$25,000. The city also to guarantee bonds to the amount of \$100,000. As soon as the subscription is made, the present board of directors will resign, leaving the city, which will then own five-sixths of the stock, to elect its own representatives on the board. The road to be built is from Springfield south to the Connecticut line (about seven miles), there to connect with the Connecticut Central, now under construction.

Central Narrow Gauge, of California.

Work on this road was commenced at Benicia, Cal., May 1. The road is to extend from Benicia north to Red Bluffs, about 130 miles.

Railroad Aid in Ontario.

The following grants to railroads in Ontario were made at the late session of the Provincial Parliament: Midland, \$90,100; Northern Extension, \$56,000; Toronto, Grey & Bruce, \$50,625; Wellington, Grey & Bruce, \$50,450; London, Huron & Bruce, \$135,000; Prince Edward County, \$86,500; Whitby & Port Perry, \$42,000; Port Dover & Stratford, \$120,000; Cobourg & Marmora, \$18,000. The whole amount granted was \$648,675.

Hudson River & Hoosac Tunnel.

The old project for a railroad from Albany to the Hoosac Tunnel has been revived, and surveys are being made. The proposed line is from Albany east through Wynantskill and Stephentown to the Massachusetts line, where connection would be made with a road built westward from the tunnel. It is also proposed to build a branch from Albia to Troy.